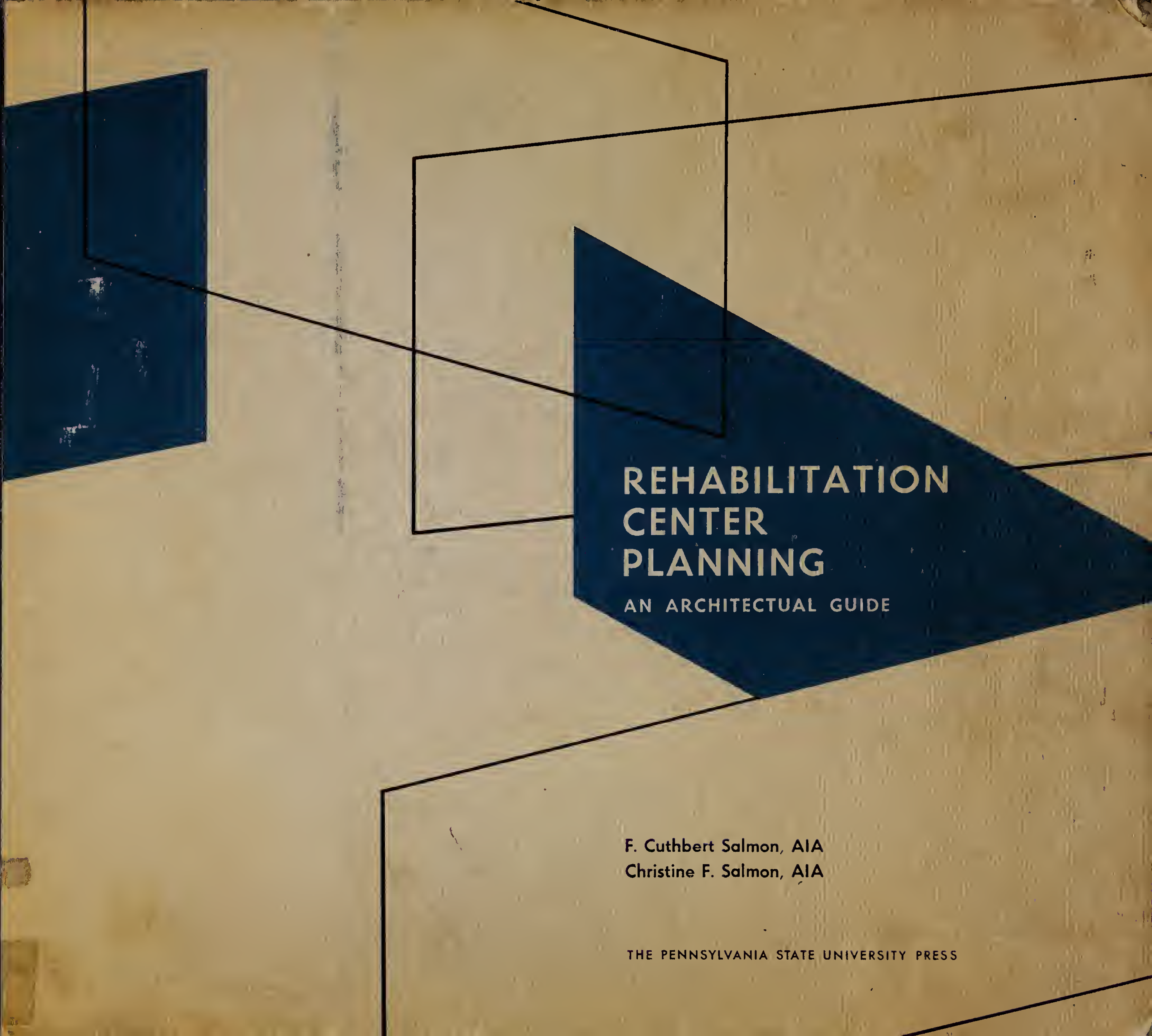

REHABILITATION CENTER PLANNING

AN ARCHITECTURAL GUIDE

F. Cuthbert Salmon, AIA
Christine F. Salmon, AIA

THE PENNSYLVANIA STATE UNIVERSITY PRESS

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F. CUTHBERT SALMON, A.I.A.
CHRISTINE F. SALMON, A.I.A.

THE PENNSYLVANIA STATE UNIVERSITY PRESS

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Introduction

Rehabilitation means many things to many people. Above all, it means working to find the best way of satisfying all of the important needs of the handicapped person. It requires the collaboration of many different professions. Only the co-operative efforts of the medical, biological, psychological, social, and physical scientists provide the most dynamic program of rehabilitation today. Co-ordinating these aspects of rehabilitation and shaping the space for their optimum functioning is the contribution of the architect to rehabilitation.

This architectural guide to rehabilitation center planning describes some of the major areas of activity within a rehabilitation center. It also describes rehabilitation programming, planning principles, and environmental considerations. The purpose of this composite is to present to the architect the scope of the rehabilitation problem and some possible solutions, and to point out to those in other professions the kind of contribution that the architect can make to the planning of such a center.

The unique character of each rehabilitation center is emphasized. Plans and drawings are presented in a manner intended to minimize the possibility of misapplication by duplication. Although emphasis is placed upon comprehensive, multiple disability type centers (including medical, social adjustment, and vocational services), the principles involved are applicable to many other situations encountered when building for the physically handicapped.

The component parts of a center are presented together with a brief discussion of the kinds of activities and the emphasis each should receive to produce the best center in any location. Flow charts have been used to show the interrelationships of these areas of activities. The several departments of a center are shown with some explanation of the activities within them and how these relate to other parts of the center.

Details showing the basic data needed in all rehabilitation center planning have been given; other architectural data is available in standard architectural guides. Details peculiar to this specialized type of building are among the planning principles emphasized in this guide. Data represent proven application of the details and principles.

* * *

This guide is published as a result of a project conducted by The Pennsylvania State University and its co-sponsors, the Conference of Rehabilitation Centers and the American Institute of Architects, and made possible through a grant from the Office of Vocational Rehabilitation, United States Department of Health, Education and Welfare.

A technique of systematic observation has been used in the study of twenty-eight rehabilitation centers and institutions in the United States and Canada visited by the project's staff. Also, plans and programs of other centers have been analyzed to provide a background of material for the guide. The material presented reflects not only observations resulting from discussions held with both staff and patients, but also architectural conclusions established by comparative analysis of these observations and discussions.

The material also incorporates the ideas and opinions of the project's Advisory Panel. The Panel consisted of the following members of the Conference of Rehabilitation Centers:

Charles E. Caniff, Executive Director
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The guide could not have been published without the untiring help of the members of the Advisory Panel and the assistance of many of The Pennsylvania State University faculty. The authors are indeed grateful for the contribution of time, thought, and effort on the part of all concerned.

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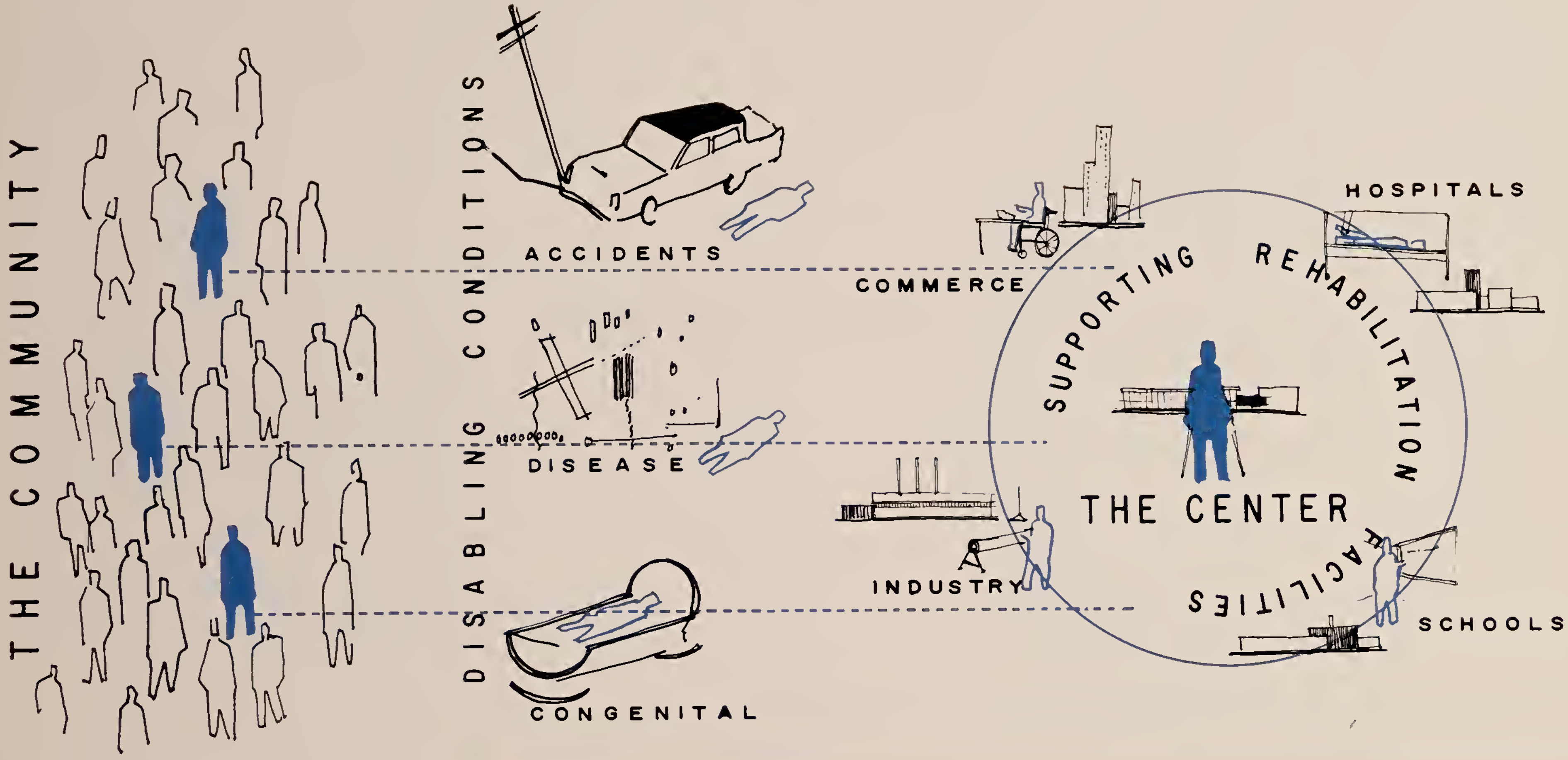
I. Rehabilitation Today

Contemporary rehabilitation programs include many aspects of several disciplines, all focused upon the purpose of "restoration of the handicapped to the fullest physical, mental, social, vocational, and economic usefulness of which they are capable."* No longer are "homes for the handicapped" sufficient. Today's rehabilitation center has an atmosphere of optimism about it that promises much for the development of the individual into a responsible citizen. It is a vital part of the community, and shares the communal aspirations toward progress and human dignity.

---

*National Council on Rehabilitation, "Symposium of the Process of Rehabilitation"; Cleveland, 1944; page 6.


THE COMMUNITY
DISABLING CONDITIONS
ACCIDENTS
DISEASE
CONGENITAL
COMMERCE
INDUSTRY
SUPPORTING REHABILITATION FACILITIES
THE CENTER
HOSPITALS
SCHOOLS

II. Rehabilitation and the Community

Successful rehabilitation center planning is a community idea. Consequently, the rehabilitation planner needs to know facts about the neighborhood, city, state, and nation of which the center is to be a part. He needs accurate answers to questions of this sort:

Commerce and Industry: What are the major sources of industrial accidents? What are the opportunities for employment of rehabilitated persons and for industrial co-operation in obtaining equipment and materials to train the disabled? Can sub-contracts be obtained for industrial assembly training?

Education: What academic and vocational education, either public or private, is available? Is there an adult education program that will accept the disabled? Is there a university program that may seek to develop a professional teaching relationship with the center?

Health Facilities: What medical, hospital, and mental health facilities are available or are planned to deal with problems of disability? What co-operative relationships can be arranged with the center? Is the community a major medical center and how will the rehabilitation center participate in research?

Housing: Is suitable housing available for staff, for relatives of patients, and for the disabled from out of town who are enrolled as out-patients? A good near-by motel may be an asset.

Government: What is the attitude of local government toward overcoming restrictions detrimental to the best functioning of the center? Are there any local or state laws involved? Is the state legislature sympathetic to improving rehabilitation services?

Recreation: Can the center develop a co-ordinated program with existing recreational and cultural interests of the community? To what extent will they accommodate the disabled?

Religion: Does the center have any special religious emphasis? What co-operation can be expected from local religious groups in the work of the center?

Transportation: Will it be easy to get to and from the center? Will long distances be involved? If so, can they be managed easily?

Utilities: How can the needs of the center for light, heat, water, sewage disposal, and communications be met?

Volunteers: Is the community rehabilitation minded? Will there be extensive volunteer participation in daily operations by advisory groups, and sponsorship of large community meetings by civic organizations?

Special community situations will raise many other questions. Sources of supply for this kind of information include the Chamber of Commerce, Board of Education, medical associations, Housing Authority, government agencies, Recreation Board, Council of Churches, service organizations, the city planning commissions, and all other organizations and individuals who are interested in the present and future of their community. Federal Government assistance should also be investigated at an early stage of planning.

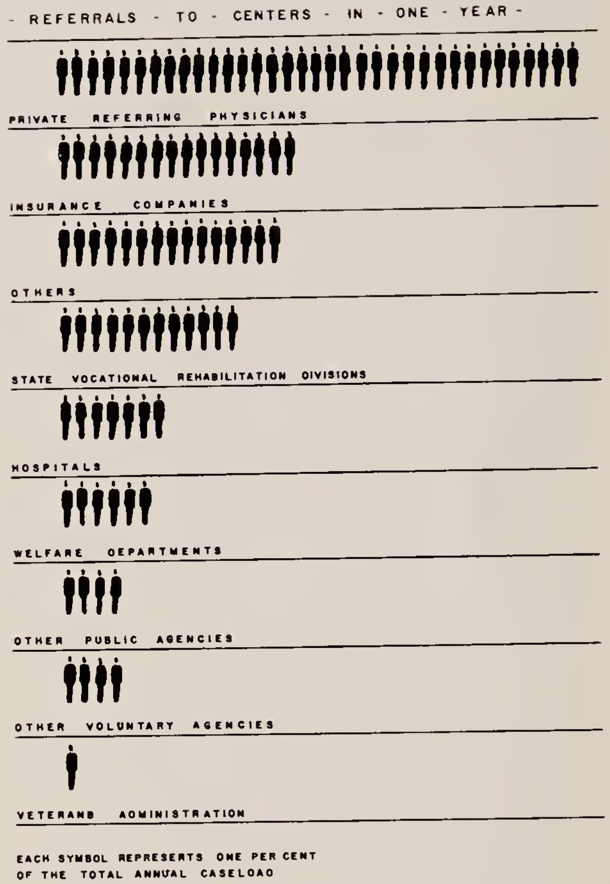
III. Rehabilitation Center Programming

The first step in rehabilitation center planning consists of the careful consideration of the interrelationships of all possible parts and an evaluation of the areas that will be included now and in the future.

The extent of the need for the center is closely related to the community of which it is a part, and is often partially determined by the sponsoring agent. A survey of the need includes an estimate of the number of persons and kinds of groups requiring rehabilitation services, as well as a study of existing services and how they may be best augmented.

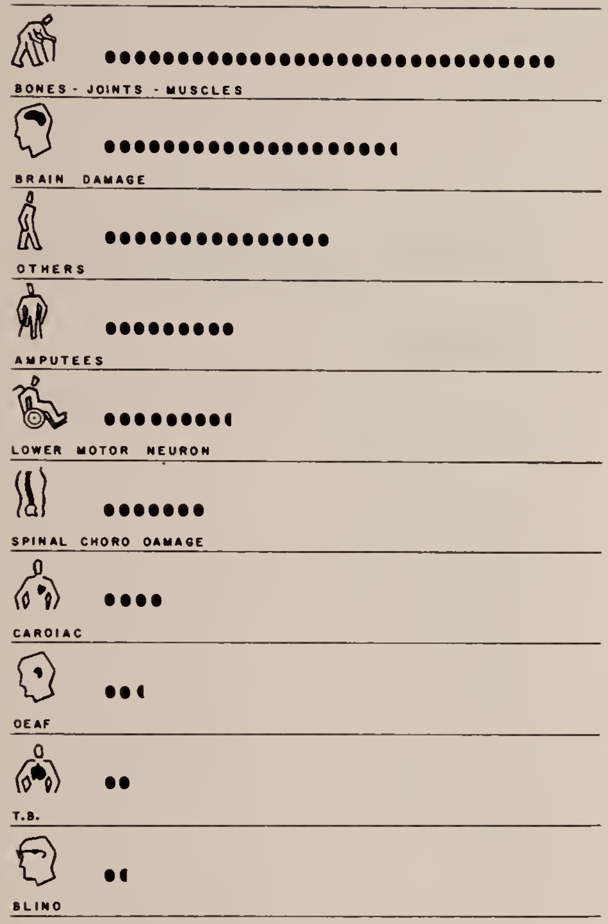
PATIENT GROUP

It is important to recognize that the situation of the patient is not static. Developments in medicine and changes in population or community structure will inevitably affect the character of the patient groups to be served. Who will receive the service, adults or children? The selection of patients is controlled to a considerable extent by the source of referral. Each referral source will present particular demands for service. For example, the state vocational rehabilitation divisions are guided by different criteria for service than industry and other voluntary and public agencies. (See chart, "Referrals to Centers in One Year.")



"Rehabilitation Centers Today—a report of the operation of 77 centers in the United States and Canada." Published by the United States Government Printing Office, Washington, D. C., 1958.

- DISABILITIES - SERVED -



EACH SYMBOL REPRESENTS ONE PER CENT OF THE TOTAL ANNUAL CASELOAD

"Rehabilitation Centers Today—a report of the operation of 77 centers in the United States and Canada." Published by the United States Government Printing Office, Washington, D. C., 1958.

NUMBER OF PATIENTS

In order to determine accurately the extent of rehabilitation services required in a given community, one must conduct a protracted and detailed survey of each individual to be involved, and obtain complete knowledge of present census, population trends, and ethnic and cultural changes in a given community.

TYPES OF DISABILITIES

The impact of new developments on medical care will drastically change demands as we now know them for rehabilitation center service. Changes in the population will bring about increased incidence of some disabilities. For example, the growing group of aged individuals presents specific problems relating to geriatric medicine and special needs for rehabilitation services. (See chart, "Disabilities Served.")

SERVICES PROVIDED

The comprehensive rehabilitation center will provide various components of service in medical, psychological, social, and vocational areas. These needs can be ascertained only by a thorough study of the community and its resources. For example, the question of whether to provide in-patient or out-patient facilities is closely related to the availability of equivalent services in the community.

AUXILIARY SERVICES

One must augment the specific rehabilitation services by considering related facilities such as food service, housing, recreation, administration and staff, and education and research.

BUDGET

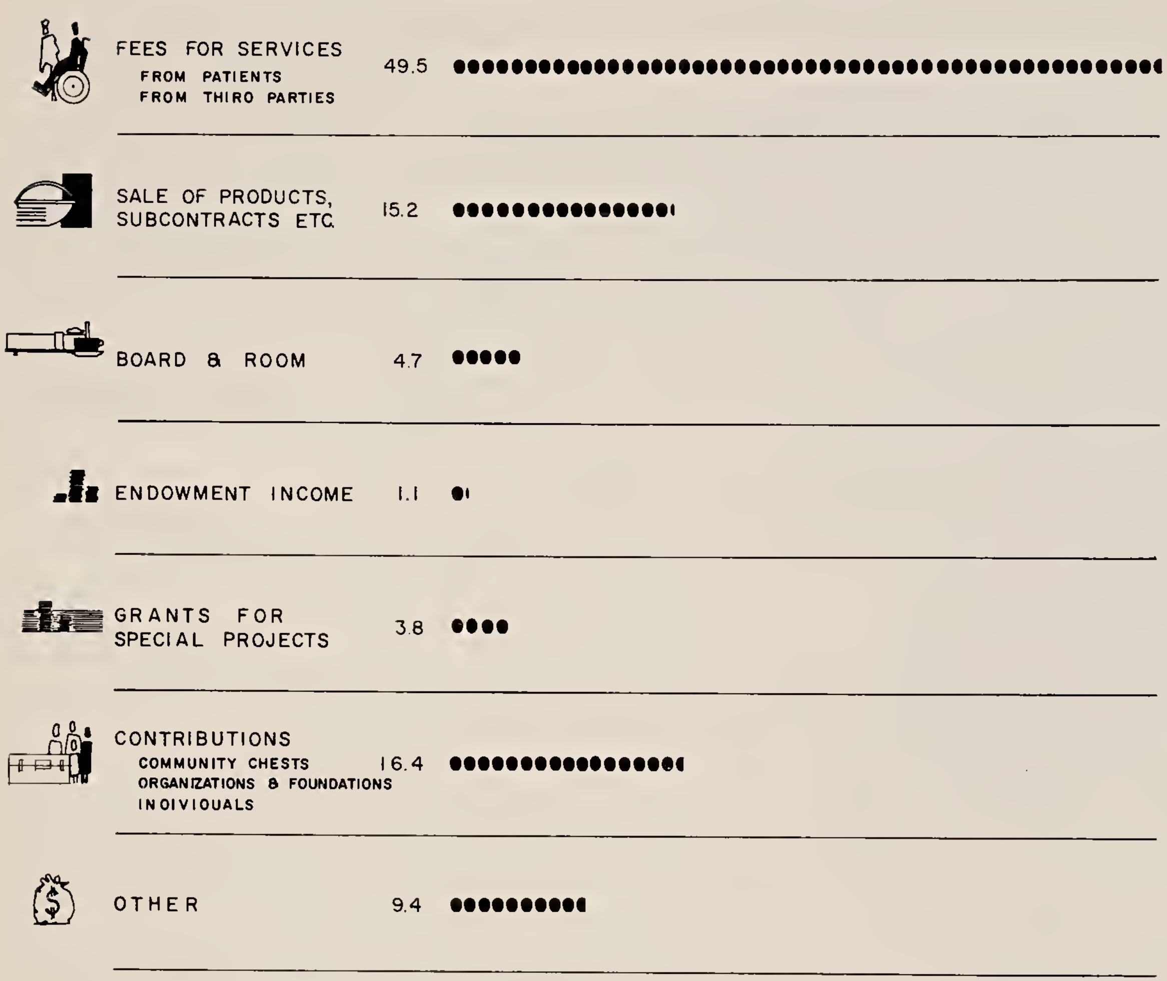
The development of a rehabilitation center program entails such expenses as the acquisition of the site, building construction costs, salaries, wages, and maintenance. All such costs must be balanced by initial income and operating income. (See chart, "Operating Income.")

Successful programming requires the cooperation of a planning team at the earliest possible stage of development. Members of the planning team should include representatives of patients, top administrative personnel, community leaders, sponsoring agents, members of the medical as well as other professional rehabilitation groups, and the professional planner, the architect.

Together this group must decide upon what things the center will include, what it will exclude, and what may be offered in the future. They will establish the services to be offered: the medical, psychological, social and vocational services, administration, staff, volunteer work, housing, utilities, storage, and indoor-outdoor relationships.

If any of these services are already offered in the community, it must be determined whether or not and to what extent there are opportunities for affiliation. Programming of this type will include consideration of the community, staff, and patients. Good programming must also consider all these elements in proper perspective and priority. The success of the architectural solution depends upon the completeness of the program.

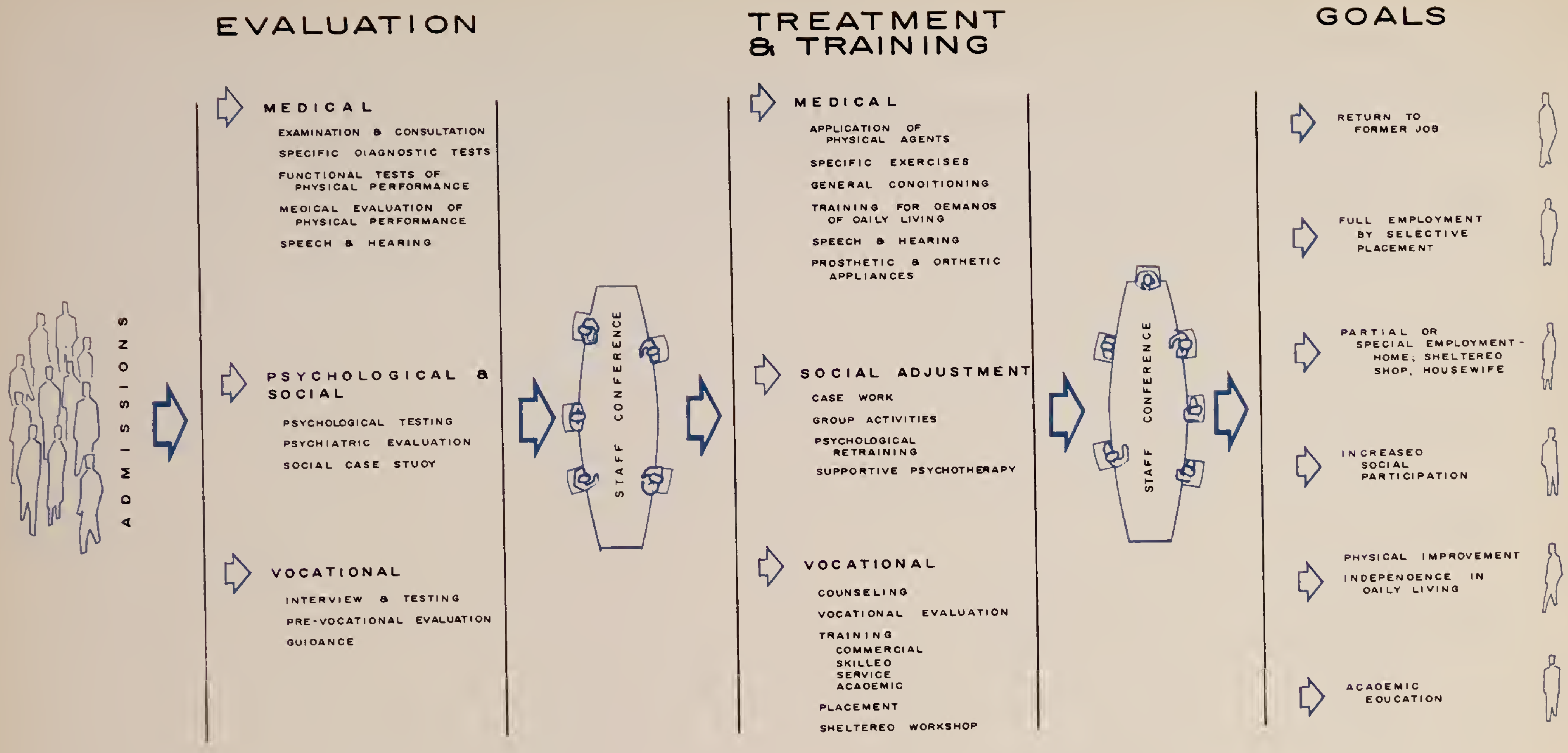
SOURCES OF OPERATING INCOME



EACH SYMBOL REPRESENTS ONE PERCENT OF TOTAL ANNUAL INCOME

*Based on 47 Centers reporting.

"Rehabilitation Centers Today—a report of the operation of 77 centers in the United States and Canada." Published by the United States Government Printing Office, Washington, D. C., 1958.



PATIENT'S ACTIVITY CHART

IV. Planning Principles

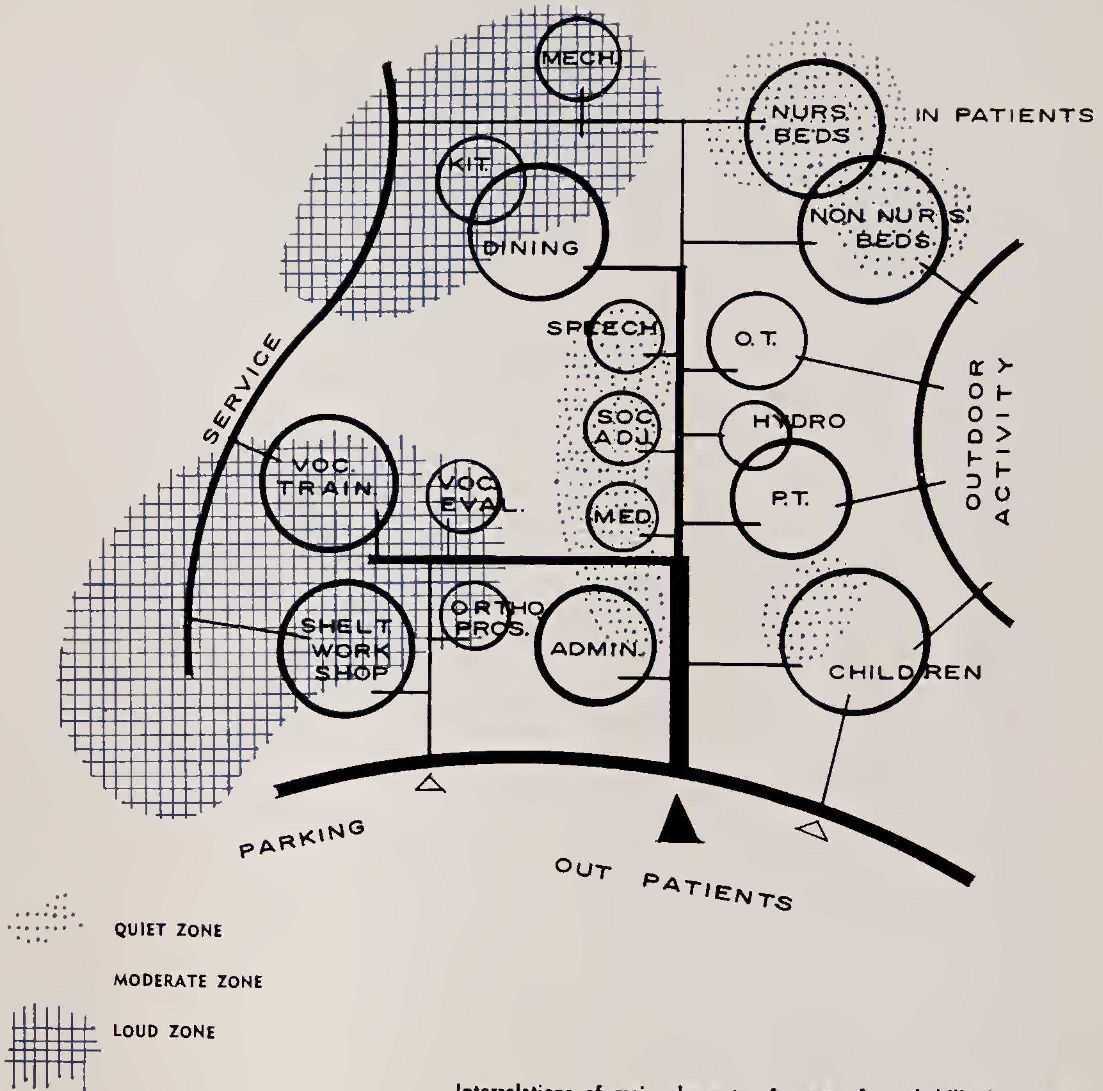
Planning means thinking in terms of spatial and human interrelationships.

The interrelationships between the several areas of activities are varied and complex; add to these the problems of site selection, considerations of finance, and provision for future expansion, and it becomes apparent that sound planning requires rigor and thoroughness.

ORGANIZATION

One of the most basic planning principles is organization: the best organization for the purpose intended. When that purpose is rehabilitation, one must take into account the limited mobility and acute sensitivity to physical environment of those for whom the building is intended.

With limited mobility, the wheel chair becomes a basic unit or module of design (see drawing A, page 20). The range of the dimensions of a standard wheel chair must be borne in mind. Design is governed not only by these basic dimensions, but also by the dimensions of the paths of action of the chair (see drawing B, page 21). Variations in disability permit variable limits of maneuverability (see drawings C and D, page 21), and the relationship of the wheel chair to basic equipment must also be recognized in the development of the planning data (see drawings E, F, and G, page 22).



Interrelations of main elements of space of a rehabilitation center.

Activities may be grouped according to relative noise levels.

SPACE RELATIONSHIPS Rooms ▼ Conditions ►	SOUND ZONES			ENTRY AREAS			Preference to Best Exposure	Could Be Isolated Unit	Related to Outdoor Activity
	Quiet	Moderate	Loud	Near Visitor's Entrance	Auxiliary Entrance	Near Parking			
MEDICAL									
Physician									
Consultation	*			*	*	*	*		
Examination	*			*					
Lab—Utility		*							
Radiology		*							
Physical Therapy									
Examination		*							
Exercise Room		*							
Treatment Cubicle		*					*		
Hydrotherapy									
whirlpool		*							
tanks		*							
pool		*							
Dressing		*							
Gymnasium		*			*	*			*
Occupational Therapy									
Treatment Room		*				*	*		
Activities of Daily Living		*					*		
Speech and Hearing									
Audiometric Testing	*								
Control and Testing	*								
Individual Therapy	*								
Group Therapy	*								
Practice Room	*								
Orthetic &/or Prosthetic Appl. Shop									
Shop			*					*	
Fitting Room		*						*	
SOCIAL ADJUSTMENT									
Psychological Individual Testing	*								
" " Therapy	*								
" Group Therapy	*								
" Play Therapy		*							
" Staff Workroom	*								
Social Group Workroom		*							
VOCATIONAL									
Vocational Evaluation									
Commercial		*					*		

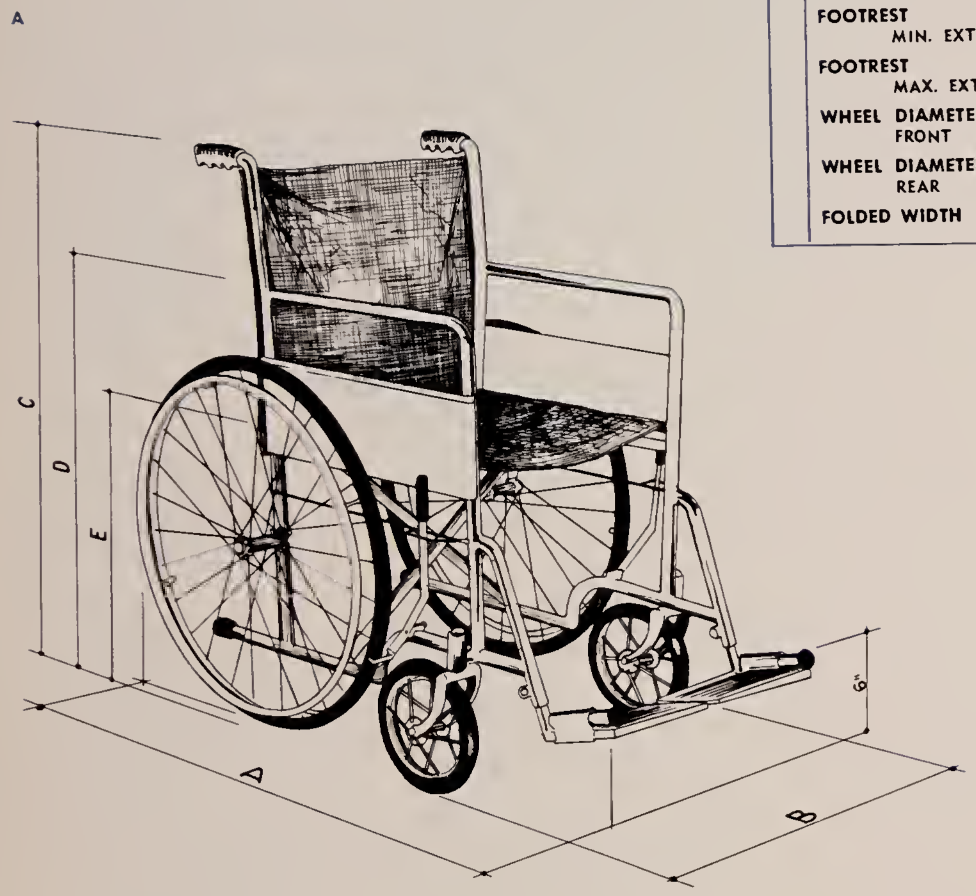
SPACE RELATIONSHIPS Rooms ▼ Conditions ►	SOUND ZONES			ENTRY AREAS			Preference to Best Exposure	Could Be Isolated Unit	Related to Outdoor Activity
	Quiet	Moderate	Loud	Near Visitor's Entrance	Auxiliary Entrance	Near Parking			
Skilled		*	*		*				
Service		*	*		*				
Vocational									
Commercial		*					*		
Skilled		*	*		*				
Service		*	*		*				
Sheltered Workshop									
Shop		*	*		*			*	
IN-PATIENTS									
Bedrooms	*			*		*	*		
Nurse's Station	*								
Dispensary	*								
Solarium	*						*		
CHILDREN'S TREATMENT & TRAINING									
Nursery		*				*	*		
Cot Room	*								
Physical Therapy		*					*		*
Occupational Therapy		*					*		*
Classroom		*					*		*
ADMINISTRATION									
Offices	*			*			*		
Conference	*			*			*		
Clerical & Business		*		*					
Waiting Room		*		*			*		
GENERAL									
Offices	*			*			*		
Waiting Room		*		*					
Auditorium		*		*	*	*			
Library	*						*		
Lounges									
Volunteer's Room		*		*			*		
Kitchen			*		*	*			*
Dining			*				*		
Canteen			*						
OUTDOOR ACTIVITY									
Play Therapy		*					*		*
Service			*						*
Carport			*						*

RECOMMENDED ILLUMINATION INTENSITIES

Room	**Foot-Candles**	
MEDICAL	General Work	Detail Work
Physician		
Consultation	50	100
Examination	50	100
Lab—Utility	50	100
Radiology	10	30
Physical Therapy		
Examination	50	100
Exercise Room	20	
Treatment Cubicle	30	50
Hydrotherapy		
Whirlpools	20	
Tanks	20	
Pool	20	
Dressing	20	
Gymnasium	20	
Occupational Therapy		
Treatment Room	30	100
A.D.L.	10	70
Speech & Hearing		
Aud. testing	30	50
Control & Test.	30	50
Individual Ther.	50	100
Group Therapy	30	50
Practice Room	30	50
Orthetic &/or Pros. Appl. Shop		
Shop	50	100
Fitting Room	30	70

Room	**Foot-Candles**	
SOCIAL ADJUSTMENT	General Work	Detail Work
Psychological Indv. Test	50	100
Psych. Indv. Therapy	50	100
Psych. Group Therapy	50	100
Staff Workroom	50	100
Soc. Group Workroom	50	100
VOCATIONAL		
Vocational Eval.		
Commercial	100	150
Skilled	30	500
Service	30	
Vocational Train.		
Commercial	100	150
Skilled	30	500
Service	30	
Sheltered Workshop		
Shop	30	500
IN-PATIENTS		
Bedrooms	10	30
Nurse's station	50	100
Dispensary	50	100
Solarium	30	100

Room	**Foot-Candles**	
CHILDREN'S TREAT. AND TRAINING	General Work	Detail Work
Nursery	30	50
Cot Room	10	
Physical Ther.	30	50
Occup. Ther.	30	100
Classroom	30	50
ADMINISTRATION		
Offices	50	100
Conference	30	50
Clerical & Bus.	100	150
Waiting Room	15	30
GENERAL		
Offices	50	100
Waiting Room	15	30
Auditorium	15	30
Library	70	
Lounges	15	30
Volunteers Room	30	50
Kitchen	50	70
Dining	15	30
Canteen	15	30
Storage	10	
Toilets	20	
Locker Room	20	
Corridors	10	
OUTDOOR ACTIVITY		
Play Therapy	0	
Service	5	
Carport	5	



	ADULT CHAIR MEASUREMENTS	Standard	Range
A	LENGTH OVER-ALL	41½	39 -45
B	WIDTH OVER-ALL	24	24 -25½
C	HEIGHT OVER-ALL	36	36 -42
D	HEIGHT ARMS FROM FL.	29	29 -31¼
E	HEIGHT SEAT FROM FL.	19½	19½-22
	FOOTREST MIN. EXTENSION	14¼	13 -16½
	FOOTREST MAX. EXTENSION	20¾	19½-20¾
	WHEEL DIAMETER FRONT	8 or 5	5, 8, 20, 24
	WHEEL DIAMETER REAR	24	5, 8, 20, 24
	FOLDED WIDTH	10	10 -11½

WHEEL CHAIRS

In addition to the standard wheel chair, other stock types are available to suit patients with various disabilities. These other types include one-arm drive chairs, folding arm chairs, chairs with large wheels in front, various armrests, footrests, and accessories.

Chairs with large rear wheels are standard and most practical as it is easier for the patient to transfer from this type of chair to furniture and automobiles. Chairs with large front wheels can turn in a smaller space.

Hand rims for steering and propulsion are attached to the wheels and for one-arm operation have two rims on one wheel. Various other devices for steering and braking are available.

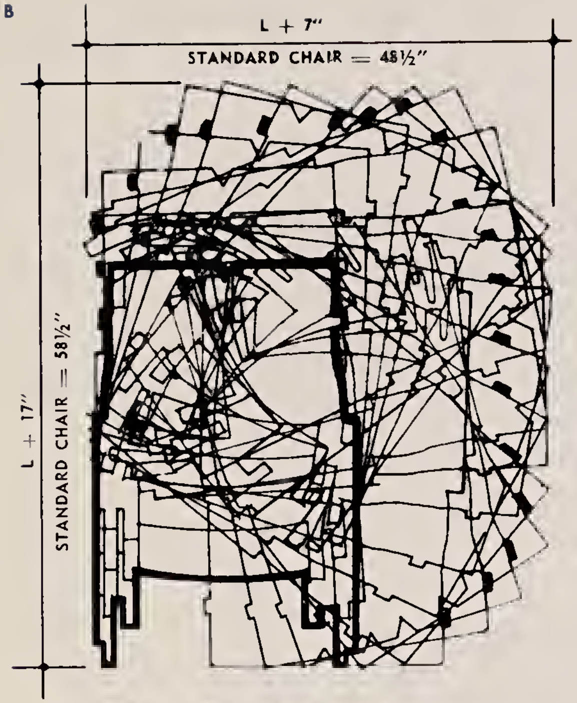
Most wheel chairs fold to a width of 10" for storage or travel.

Junior size chairs range from minimum dimensions of 29" long, 33" high, and 18½" wide.

FLEXIBILITY

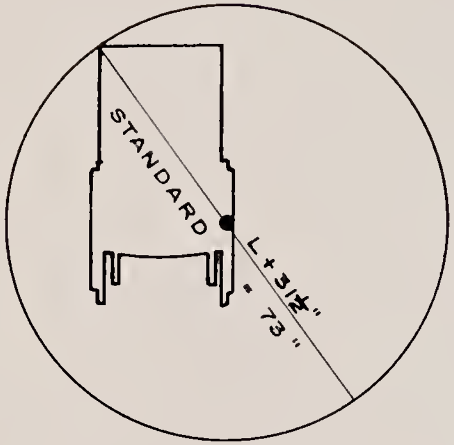
Because of the ever-changing aspect of rehabilitation programs and the continual development in methods of treatment and training, the importance of flexibility in planning cannot be overemphasized. Rigidity in today's plan will surely inhibit the logical development of any forward-looking rehabilitation activity. The architect should allow for easy circulation of staff and

B



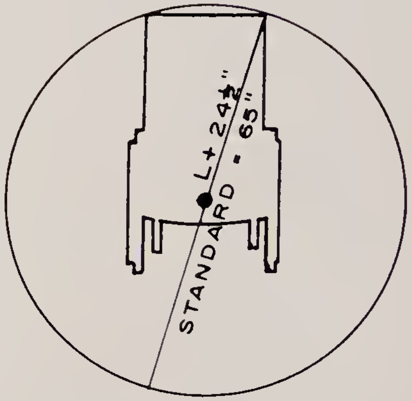
MINIMUM AREA FOR 180° TURN
STANDARD WHEEL CHAIR
OVER-ALL LENGTH L = 41½"

C



TURNING DIAMETER WITH ONE
WHEEL STATIONARY

D



TURNING DIAMETER WITH EQUAL
BUT OPPOSING MOTION IN EACH WHEEL

patients. Rooms should be designed for a number of purposes, and furnished with movable partitions, screens, folding walls and storage equipment, and suitably co-ordinated details.

EXPANSIBILITY

Census data show that the need for rehabilitation work will increase. There must be provision for increased capacity and the introduction of new techniques in present programs.

SAFETY

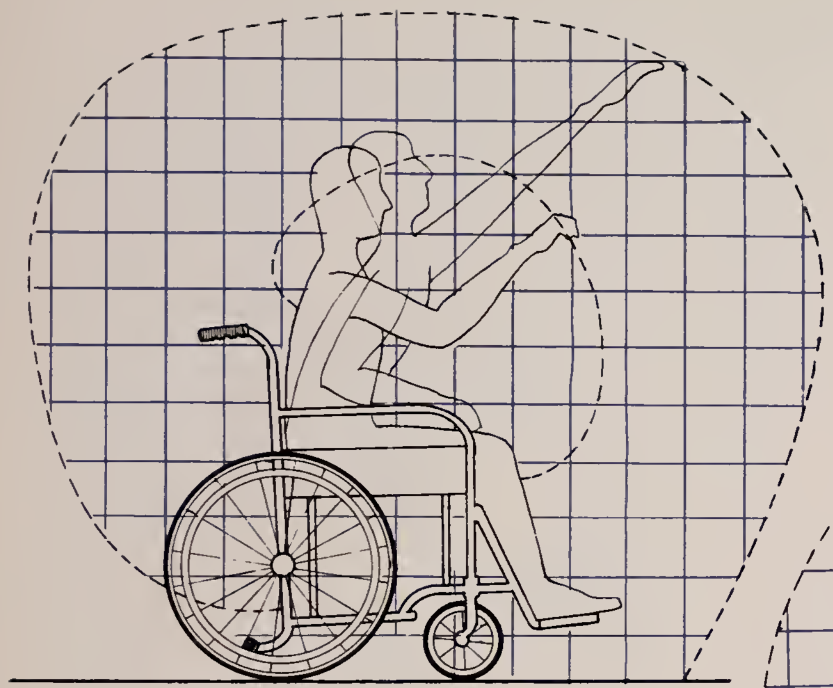
Safety provisions which merely conform with the letter of the existing law may fall far short of providing adequate safety in a rehabilitation center. Mobility of occupants is limited and reaction times may be somewhat slow; therefore, fire, falls, panic, and civil defense requirements must be given special consideration.

BUDGET

Competent planning must meet the challenge of the modest budget, just as it must avoid the excesses so tempting in the rare case of really adequate financing.

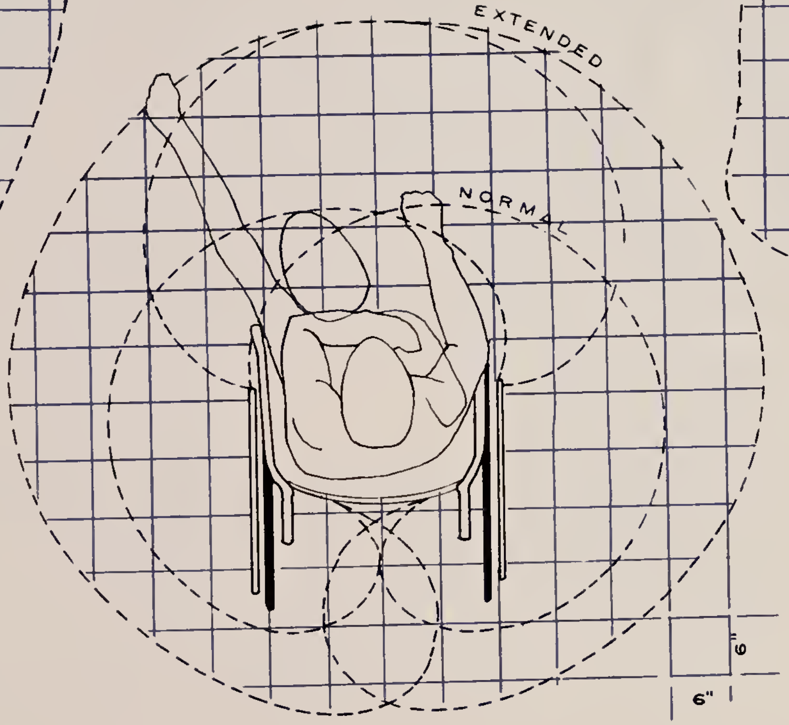
NORMAL AND EXTENDED REACH FROM WHEEL CHAIR
(Average Normal Male)

E



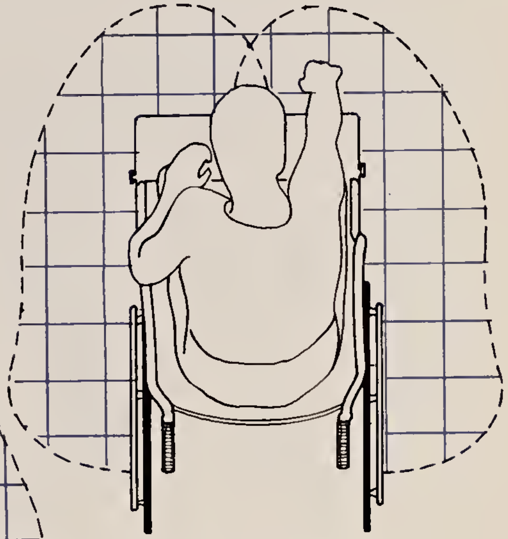
VERTICAL PLANE

F

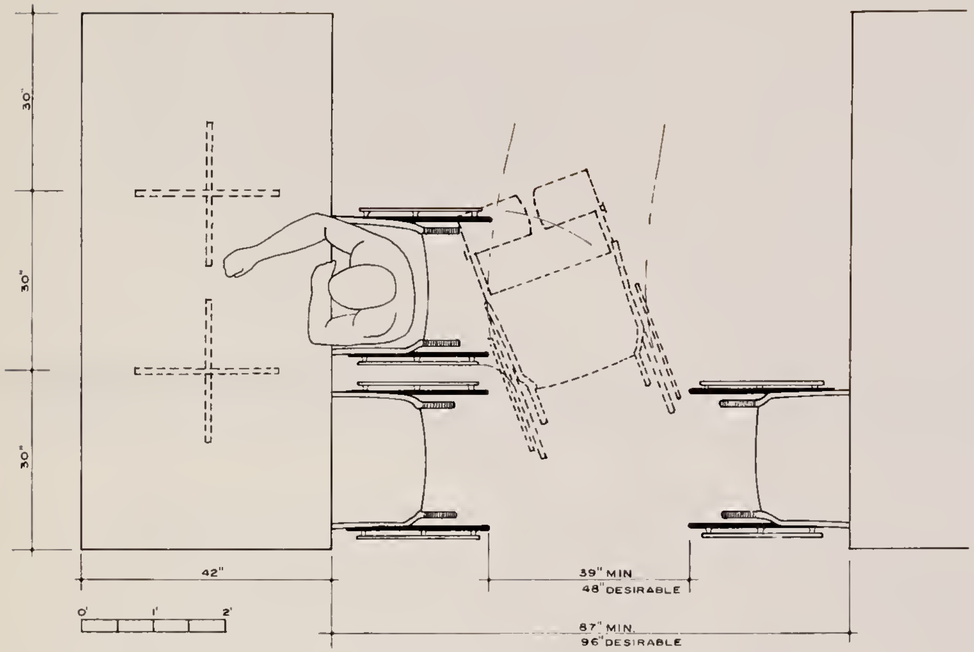


HORIZONTAL PLANE 30" FROM FLOOR

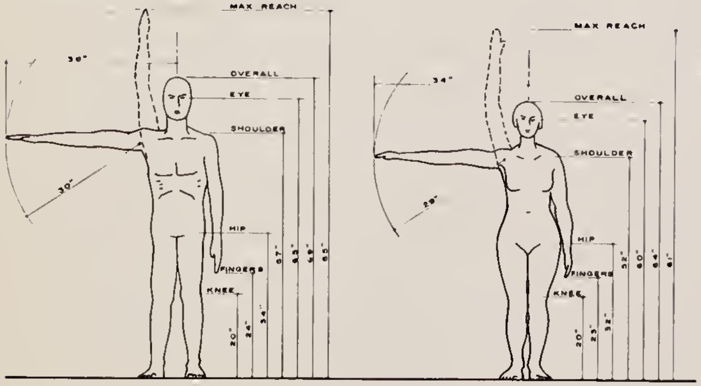
G



HORIZONTAL PLANE AT FLOOR

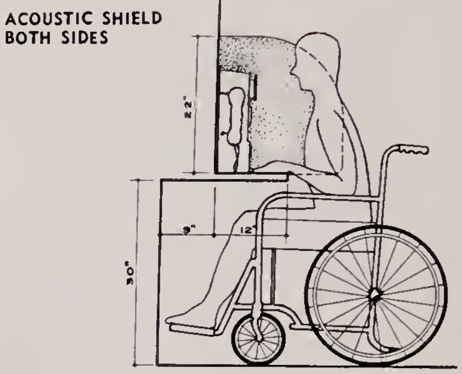


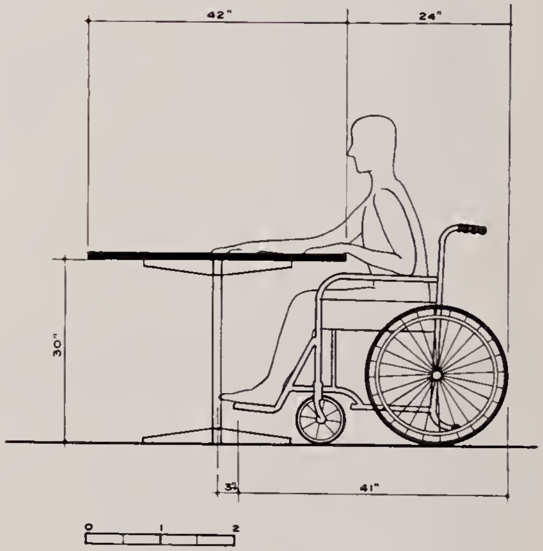
DINING TABLE AND SPACING OF TABLES FOR WHEEL CHAIR PATIENTS



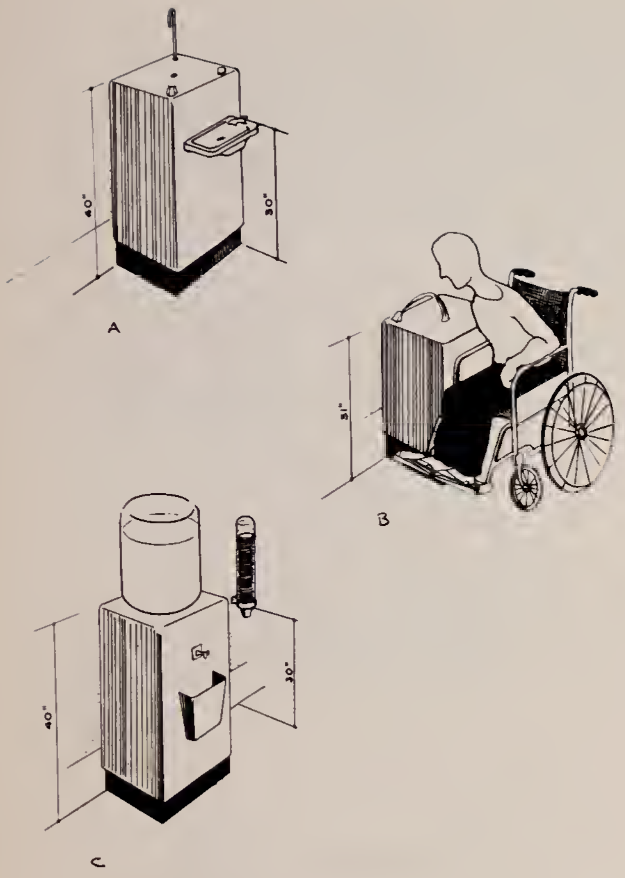
BODY DIMENSIONS OF THE AVERAGE ADULT MALE AND FEMALE FIGURE

TELEPHONE





DINING OR WORK TABLE FOR
WHEEL CHAIR PATIENTS



DRINKING FOUNTAINS

Drinking fountains, water coolers, and other stock items may be selected or adapted for use by wheel chair patients.

For example:

A Bubbler 30" from floor may be attached to standard cooler.

B Standard children's size cooler may be used.

Or

C Paper cup dispenser (lower cup 36" from floor) may be provided for fountains of standard height.

REALISM AND CHARACTER

A building must be realistic. Sentimentality in the design of a building facade, elaboration of interior decor beyond the point of serviceability and esthetic propriety, any attempt to make the rehabilitation center appear to be, or to function as, some other type of structure than it truthfully is, will produce an inferior building and will impede the activities for which it is intended. Materials and details of construction should be selected which are suitable to the purpose, economic in maintenance, and produce an open, bright, and cheerful atmosphere, in conformity with a modern rehabilitation program.

RAMPS

Grade level entrances (with adequate drainage) should be provided wherever possible.

If entrances are not at grade level, ramps are required. Steps should be provided in addition to the ramps. Exterior ramps and steps should be suitably protected from snow and ice.

The following considerations apply to interior as well as exterior ramps:

(1) Surfaces should be of abrasive aggregate or otherwise provide against slipping.

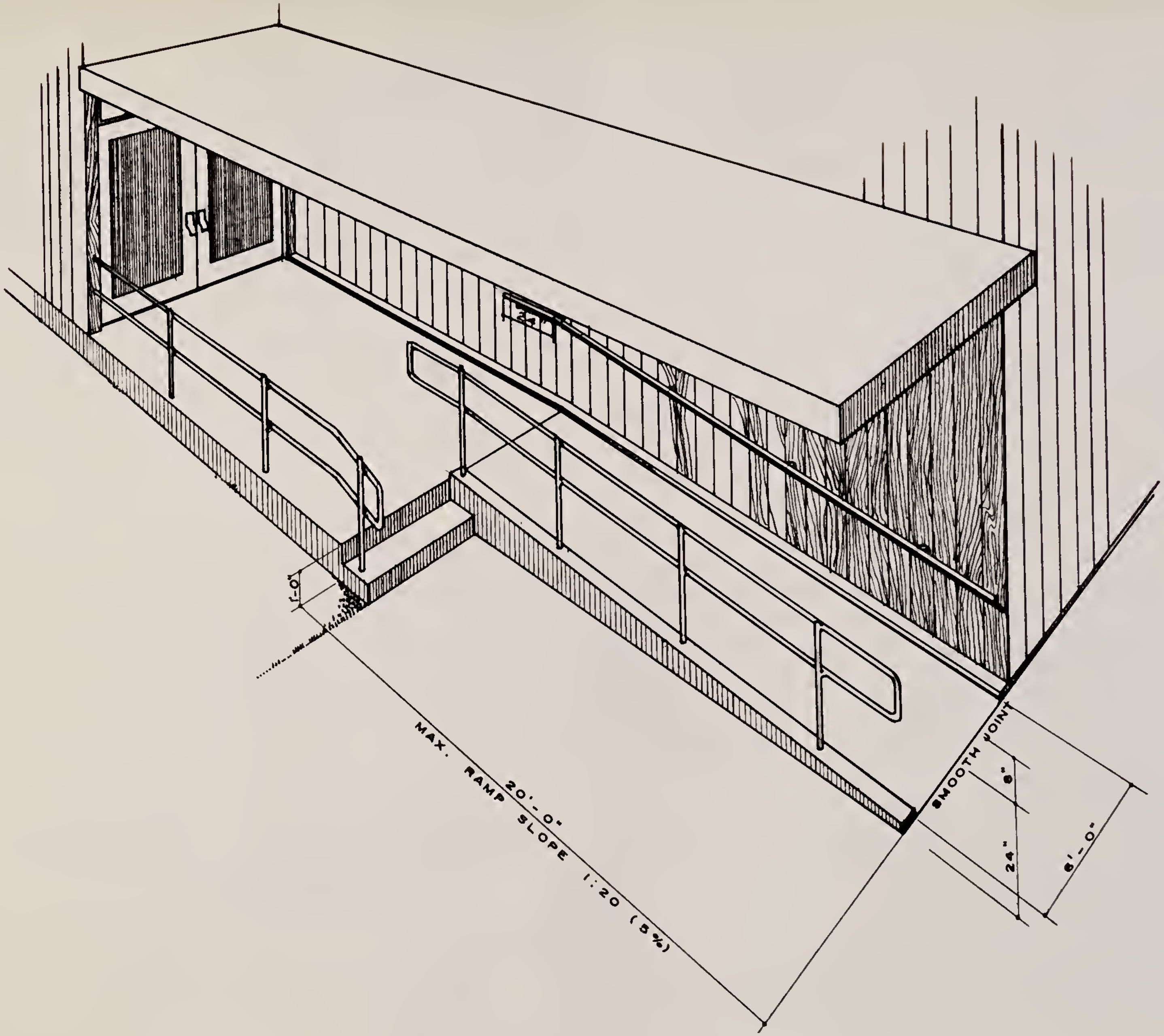
(2) Minimum width for single ramps should be 37" between handrails, 72" for two-way circulation.

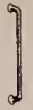
(3) Handrails should have 2" minimum clearance at walls. Rails should extend 24" beyond top step.

(4) Rails should be 32" high; and if they are to be used by children, an auxiliary rail 24" high is recommended.

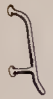
(5) Curbs 2" high, 4" wide, of concrete or wood at both sides of the ramp will prevent the wheel chair from scuffing walls or catching railing supports.

(6) The slighter the pitch of the ramp, the easier it is to use. A slope of 5% (i.e., 1' rise in 20') can be used by many wheel chair patients without assistance. Steeper inclines, although requiring less space, are less useful and may be hazardous. Many states have building codes limiting ramp pitches, but these are generally in excess of the desirable slope for rehabilitation centers. Ramps should flow smoothly into upper and lower levels.

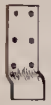

24"
1'-0"
20'-0"
MAX. RAMP SLOPE 1:20 (5%)
SMOOTH JOINT
6"
24"
6'-0"



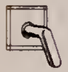
1 GOOD—CAN BE PLACED ON BOTH SIDES OF DOOR



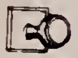
2 GOOD—USE ON PULL SIDE ONLY; THIS TYPE AND THE TYPE SHOWN BELOW HAVE A TENDENCY TO CATCH CLOTHING ON THE PUSH SIDE



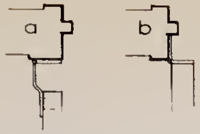
3 GOOD—USE ON PULL SIDE ONLY; ALSO SERVES AS PUSH PLATE BUT MAY CATCH CLOTHING



4 POOR—WEAK FOR BODY SUPPORT, FOR INCIDENTAL USE



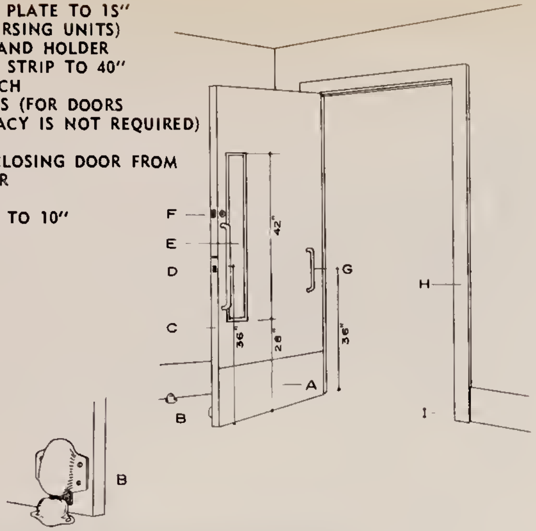
5 POOR—IMPOSSIBLE FOR SOME PATIENTS TO GRIP



HINGE A (ABOVE) PROVIDES CLEARANCE

HINGE B DOES NOT PROVIDE MAXIMUM CLEARANCE

A METAL KICK PLATE TO 15" (40" FOR NURSING UNITS)
B DOOR STOP AND HOLDER
C METAL EDGE STRIP TO 40"
D ROLLER LATCH
E SAFETY GLASS (FOR DOORS WHERE PRIVACY IS NOT REQUIRED)
F LOCK
G PULL—FOR CLOSING DOOR FROM WHEEL CHAIR
H METAL TRIM
I METAL BASE TO 10"



DOORS AND DOOR HARDWARE

The kind of door and door hardware selected for a rehabilitation center is important for maximum independence on the part of the patient, efficient operation of the center, and a minimum of maintenance.

Door Handles: Pull handles should be sturdy and provide a convenient grip. Center pulls 36" from floor.

A pull located near the hinge side of the door permits many wheel chair patients to close the door.

Pull handles may be used to advantage on both sides of the door rather than a push plate on one side and a pull on the other.

Lever handles, although easier to operate, are too weak for frequent use.

Knobs provide an inadequate grip for many patients.

Latches: Doors equipped with push or pull handles should also be equipped with roller latches to keep the door closed.

Holders: Lever or plunger door holders are not recommended, as many patients find them difficult or impossible to operate. Push-pull automatic holders are recommended.

Door Checks: Door checks or closers are unsatisfactory for operation by most wheel chair patients.

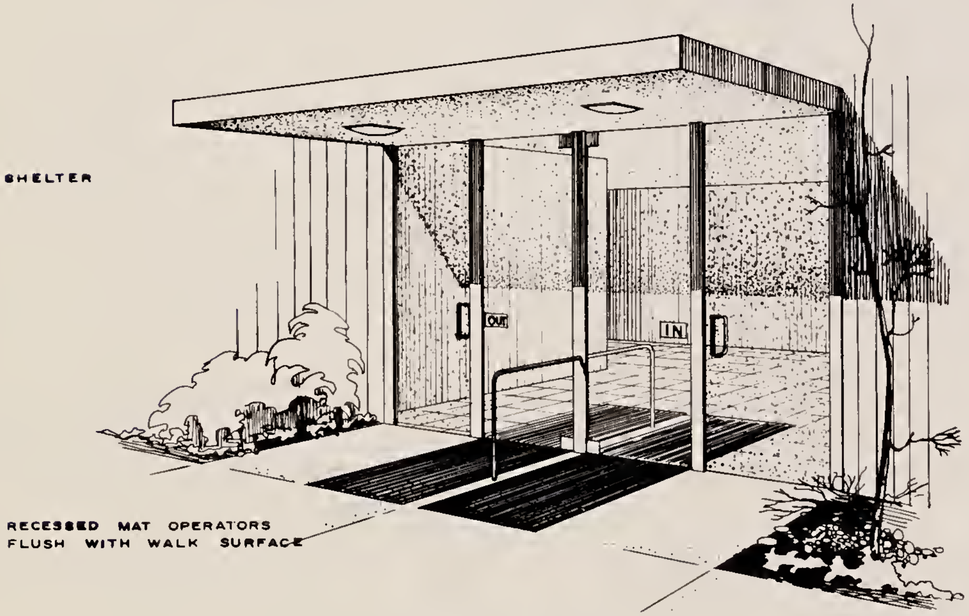
Hinges: Swing-clear hospital hinges provide maximum opening.

As doors in a rehabilitation center receive considerable stress, three hinges per door are essential. Ball-bearing hinges of an adequate size should be used.

Bucks: Metal bucks withstand heavy usage much better than do wood frames. It is essential that metal bucks be properly anchored, reinforced, and fully grouted to withstand stresses placed on the doors.

Openings: All doors used by the physically handicapped should have a minimum width of 36". Doors in the nursing unit, or where stretchers and beds must have passage, should be 46" wide.

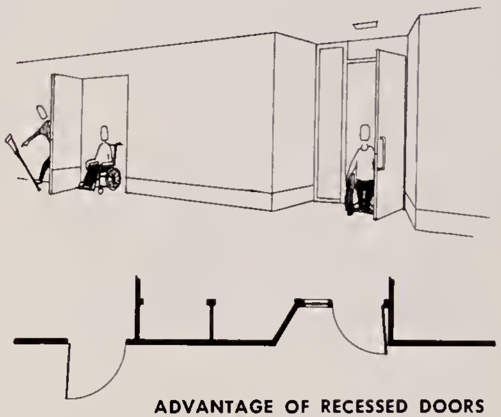
Mat-operated automatic doors are most convenient for the physically handicapped and require a minimum of maintenance. The exterior mats should be well protected by an entrance canopy or other device. Manually operated doors should flank the automatic doors for staff and visitor traffic and emergency use. Revolving doors are not acceptable for use by the physically handicapped.



AUTOMATIC ENTRANCE DOORS

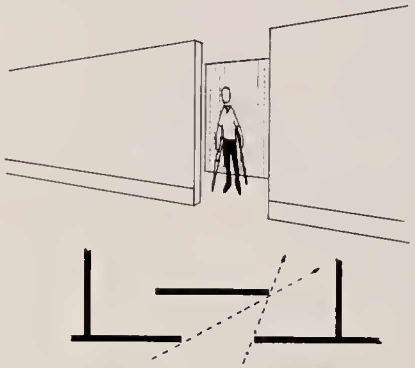
Doors are recessed to permit them to swing without protruding into corridors and creating hazards.

If doors are solid, a vision strip of safey glass flanking the door is recommended.



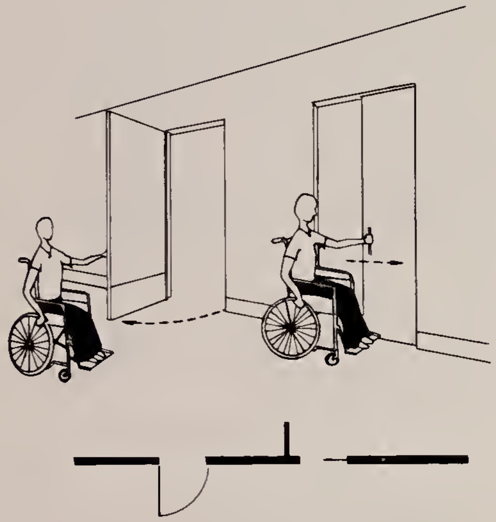
ADVANTAGE OF RECESSED DOORS

The complete omission of doors (if the building code permits) provides ease of access to rooms. Visual privacy may be maintained.



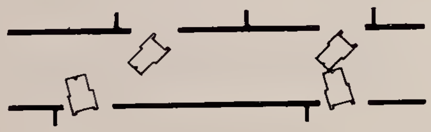
OMISSION OF DOORS

Sliding doors are more easily operated than hinged doors by wheel chair patients. Under fire regulations, sliding doors are acceptable only when used for minor rooms.



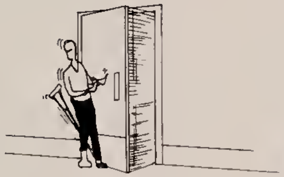
ADVANTAGE OF SLIDING OVER HINGED DOORS

Corridor doors should not be opposite each other, especially if doors swing into the corridor.

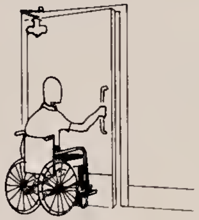


Double-acting doors present hazards, which may be minimized by providing a vision strip of safety glass.

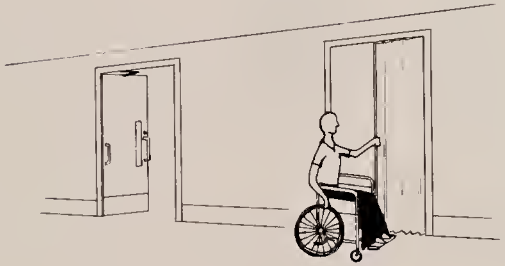
Door checks usually provide too much resistance for the door to be opened by wheel chair patients. If automatic door closers are necessary (e.g., exterior doors), closers should be full rack-and-pinion construction to permit easy, complete opening of door.



DOUBLE ACTING DOOR



DOOR CHECK

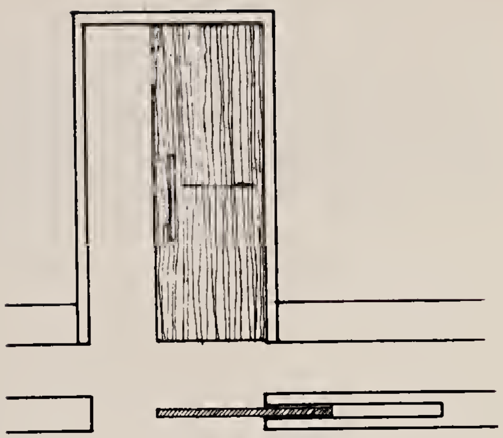


HOLD-OPEN MECHANISM

FOLDING PLASTIC TYPE

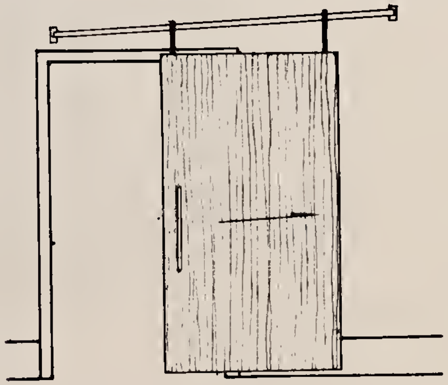
Hold-open mechanisms are recommended for installations where open windows or other causes of door closing are present.

Accordion-type doors are easily operated by wheel chair patients.

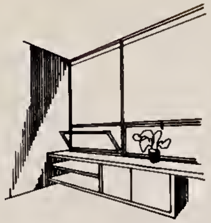


SLIDING POCKET DOOR

SLIDING DOOR—AUTOMATIC GRAVITY CLOSING

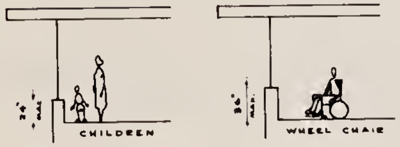


Sliding doors may operate by gravity or may be motorized.



WINDOW PROJECTION GUARD

WINDOW PROJECTION HAZARD



WINDOW SILL HEIGHT TO ALLOW OPTIMUM VISION

Hopper type windows will interfere with the operation of draperies and blinds.

Awning type windows present a potential hazard if pedestrian walks or outside activity areas are adjacent to the building.

In many areas it is important that window sills be sufficiently low to provide convenient vision. In some cases high window sills will be required for privacy.

The elimination of room obstructions will provide a safer place for the physically handicapped patient. Even in alteration work many of these hazards may be eliminated or substantially reduced.

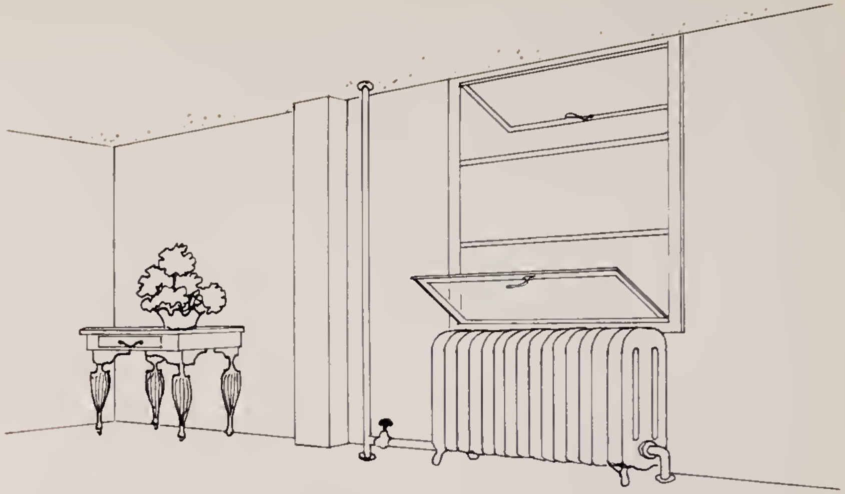
All radiators and risers should be enclosed.

The hazard of in-swinging windows may be lessened by the provision of a deep sill or shelf.

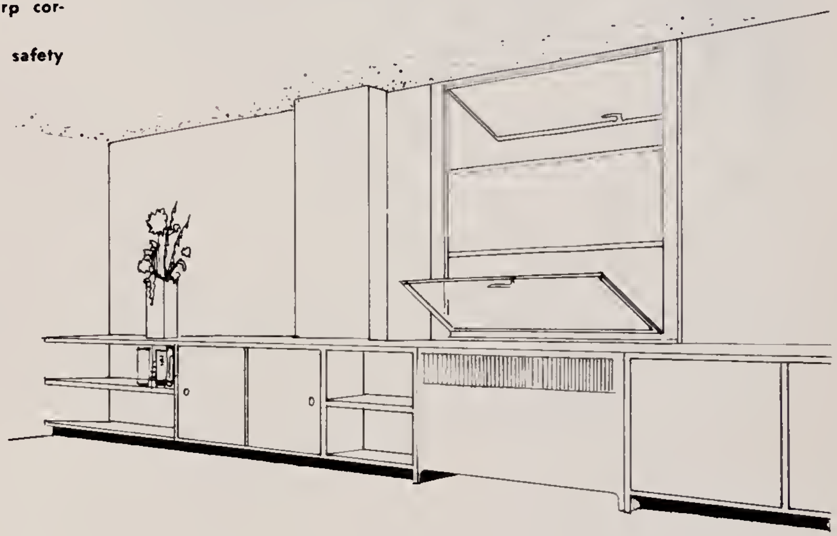
If pilasters and other protruberances cannot be eliminated, the hazard may be lessened by the proper placement of furniture.

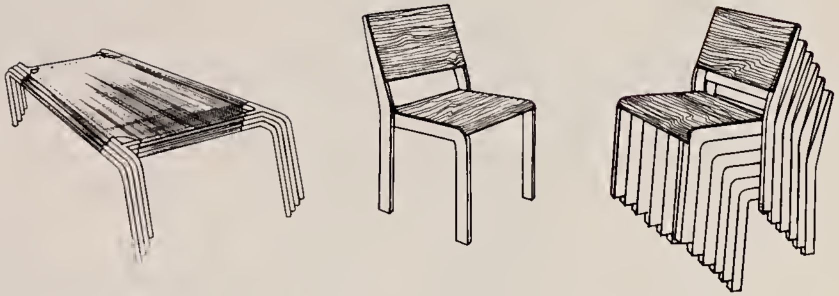
The use of unstable furniture or furniture with sharp corners should be avoided.

An incidental advantage in these considerations of safety is the resulting simplification of housekeeping.

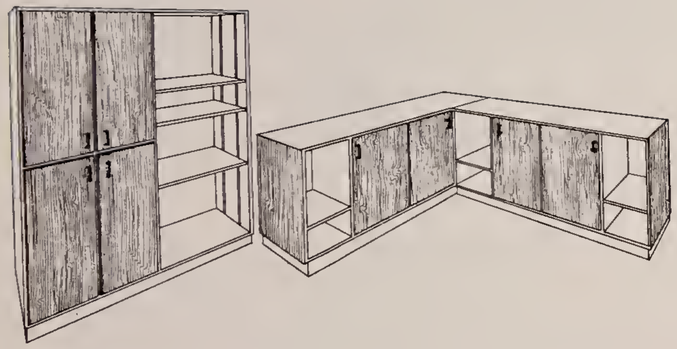


ELIMINATION OF ROOM OBSTRUCTION





Stacking furniture provides flexibility in the use of space.



Modular units provide flexible storage facilities and space sub-dividers.

MODULAR FLEXIBILITY

Repetitive structural units are not only economical but yield maximum flexibility in the subdivision of space.

Standard bays also permit the use of larger building units and lower the erection costs.

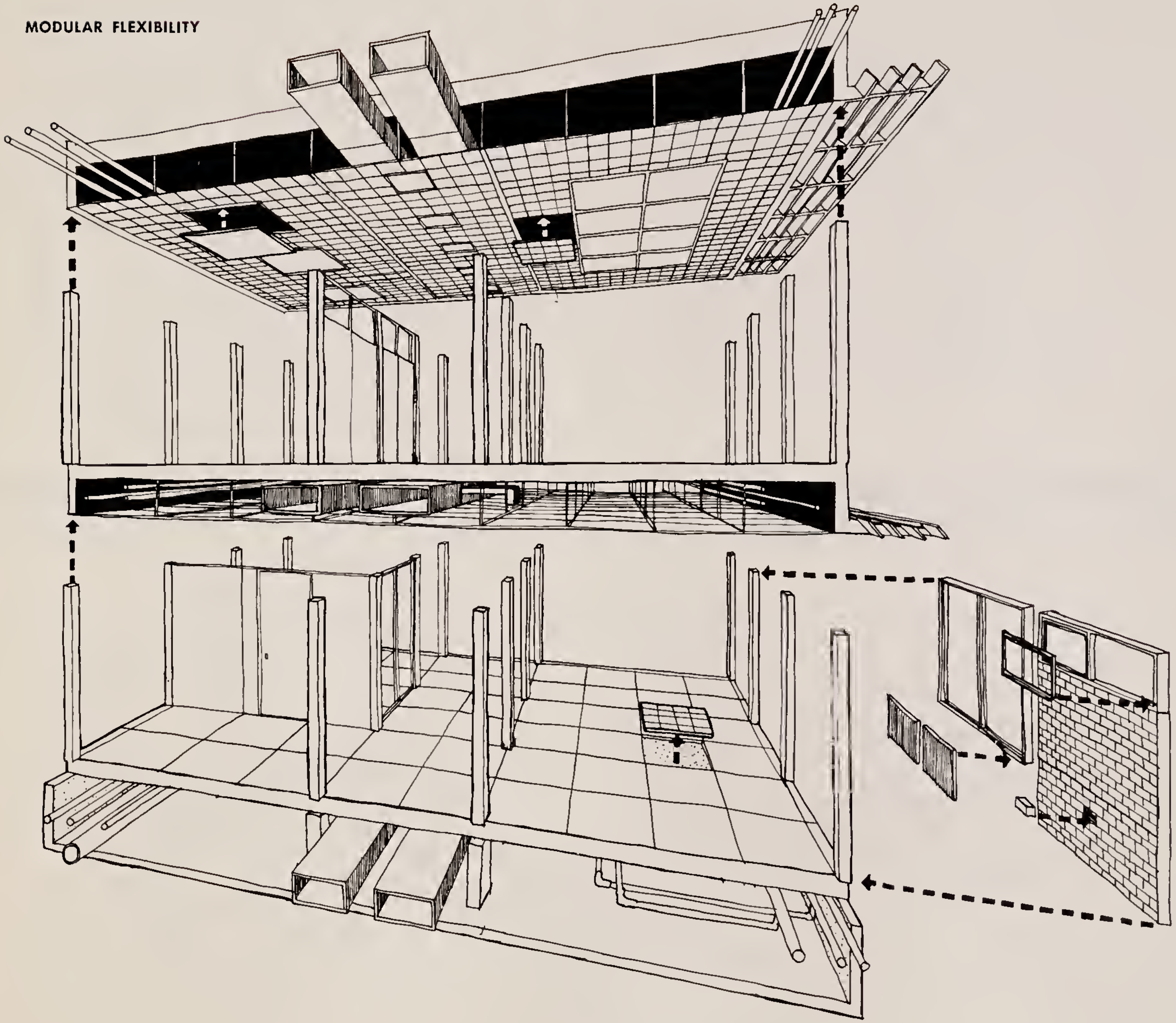
The use of modular building materials, sized and shaped to form an integral part of the modular floor, walls, and roof is highly recommended.

In a rehabilitation center many items of equipment require mechanical utilities. Convenient access must be provided to water, power, gas, ducts, etc.

A utility crawl space under the entire floor or adequate pipe tunnels provide maximum flexibility of these services. Similar flexibility may be achieved if utilities are installed and made accessible in the ceiling.

It should be noted in rooms requiring control of sound transmission, that the space between the suspended and the structural ceilings should be equipped with a sound barrier at the partitions.

MODULAR FLEXIBILITY

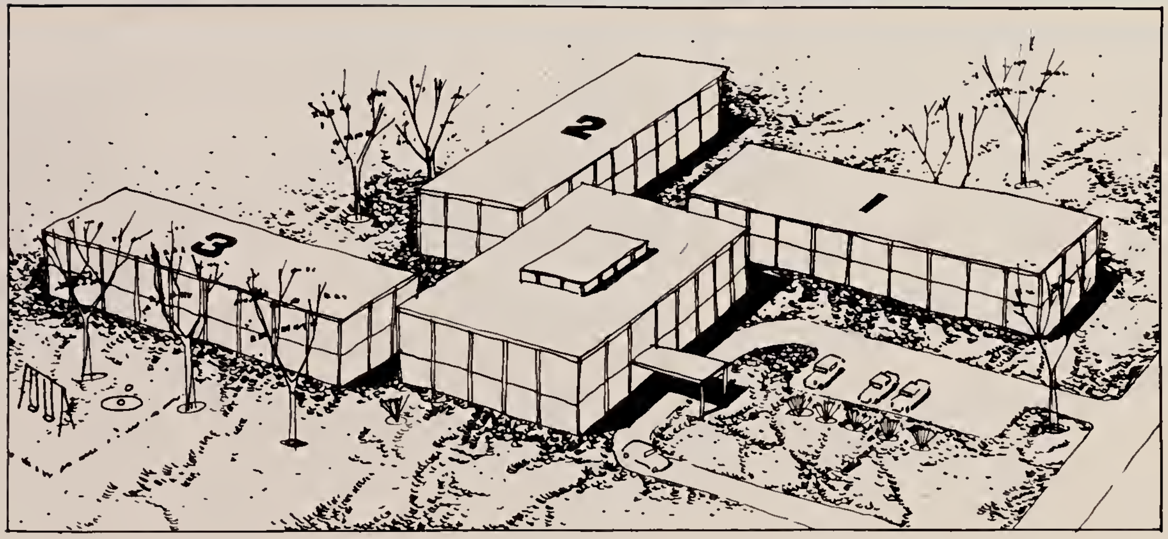


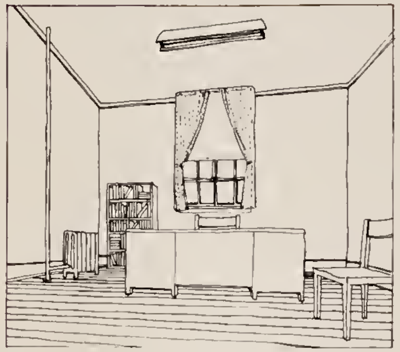
EXPANSION

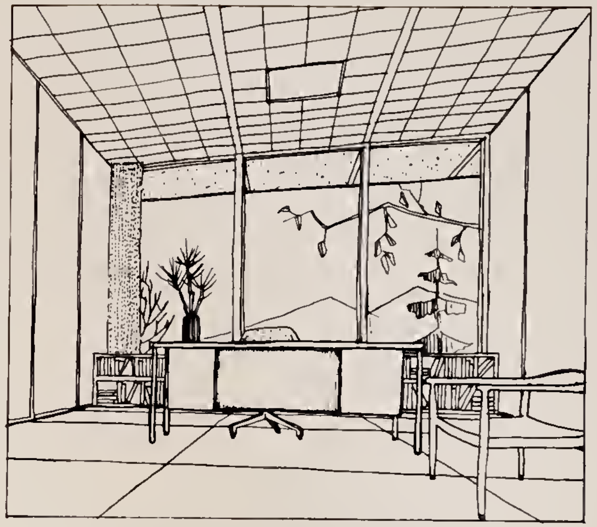
At the initial planning stage, the total center should be planned for future expansion.

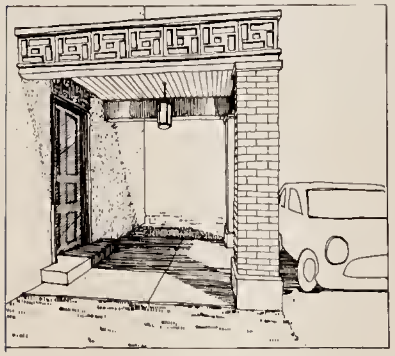
Expansion may be achieved by adding semidetached units to the initial building with minimum disturbance to the operation of the center's program.

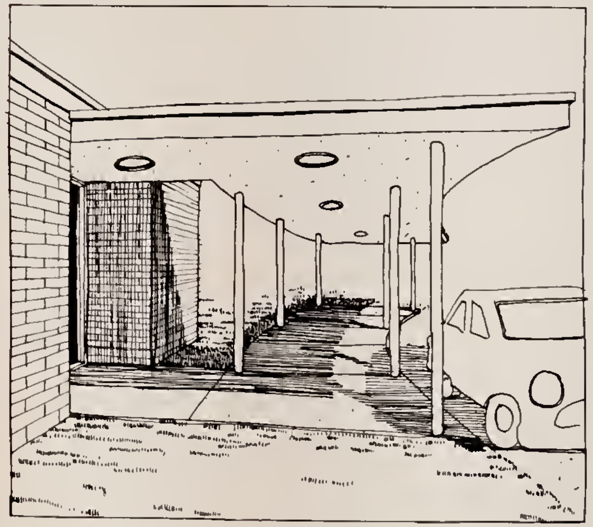
This type of unit expansion also permits a separation of basic activities within the center and an architectural expression of the different activities. The sheltered workshop, for example, may be of industrial-type construction in contrast to the in-patients' units with a residential scale.











An efficient, attractive rehabilitation center will be possible only if each part is designed to express honestly the particular function it must perform.

V. Site Considerations

A rehabilitation center deserves the best possible setting. Indoor-outdoor relationships are important; therefore, the site for the center must be chosen carefully and developed advantageously. Site selection is a major consideration, but it is by no means an isolated aspect of planning. Looking ahead to the completed project, three basic factors are necessary for successful operation. These are land, building, and people. Good centers result when the first is developed in such a way that the second becomes most usable to the third.

The following affect the site and therefore the building and its people:

Climate—the typical annual pattern of temperature, precipitation, humidity, sunshine, and frost;

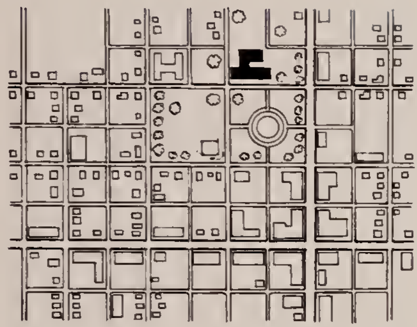
Topography—including slopes, flat ground, rolling land, and combinations of these;

Vegetation—varies with climate and topography and requires skillful design for an effective contribution to the center;

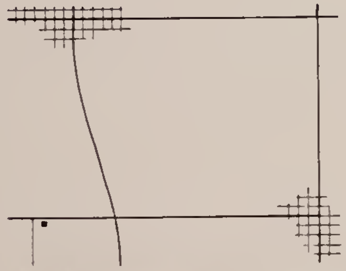
Soil—the material on which the structure will be built; its texture (sand, clay, rock), content, and drainage will affect the design of the building.

There are also aesthetic considerations. What kinds of native noises exist? Can noise be easily and effectively controlled? Are there glue factories or pine forests on the side of the prevailing breezes? What views or vistas will the center be able to look upon? Of what texture, pattern, and color are they? In site selection, perhaps the most important consideration is that of character. Will this land be compatible with the kind of building that is proposed and the kind of program contemplated?

RELATIONSHIP TO THE COMMUNITY



The site should be near these related facilities:
- i hospitals;
- ii light industry;
- iii housing;
- iv recreation;
- v public transportation.



Isolation increases the problems of transportation and housing; in-patient facilities will be required for those who might otherwise be out-patients.

SIZE AND SHAPE OF LOT

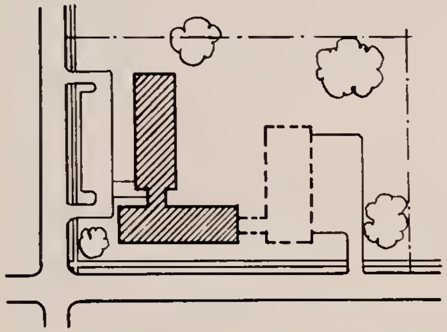
The program of activities will determine the size of the lot.

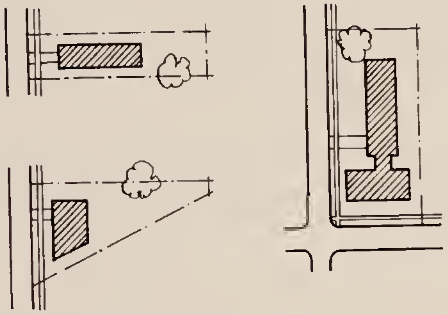
The lot should be in excess of present needs to allow for expansion.

The lot should be large enough to provide space for activities beyond the building proper, off-street parking, service areas, outdoor recreation, and outdoor therapy.

An oversized lot is economical in long-range planning.

Avoid the selection of odd-shaped lots; portions of the lot are not usable.

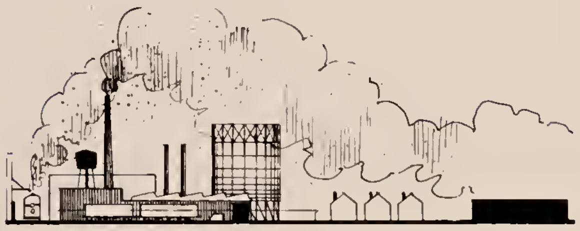




LOCATION WITHIN THE COMMUNITY

Desirable:
Within or near residential or light industrial area, parks, fire and police protection.

Undesirable:
Smoke, dirt, odors, noise, unsightly areas, ponds, dumps, railroads, industrial areas, and fire hazards.



TOPOGRAPHY

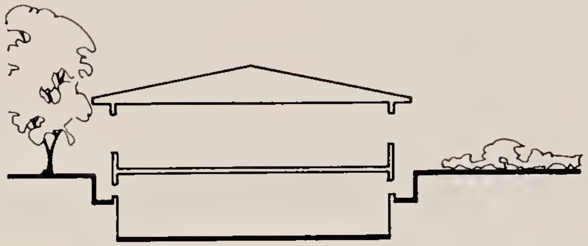
Although comparatively level sites present fewer planning problems, a sloping site with level areas permits a more compact building, with the possibility of grade level entrances at each floor.

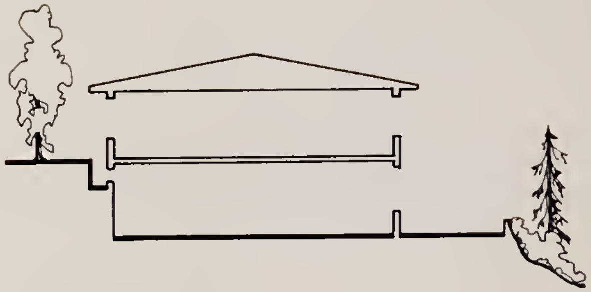
In any rehabilitation center with more than one floor, an elevator is almost essential. However, with grade level entrances, there could be less use of the elevator.

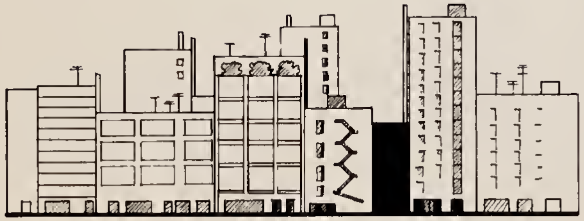
A sloping site will also allow natural light into what otherwise might be a basement with little natural light and no view.

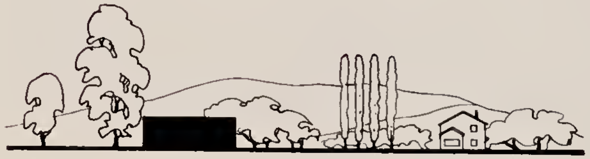
Preliminary soil investigation will avoid excessive foundation costs.

Check sub-surface water as well as surface drainage conditions.









TREES

Trees and parkland will enhance the site. Landscaped sites can be developed for areas of recreation, relaxation, and instruction.

Heavily built-up areas restrict planning and rarely provide a pleasant environment. However, complete planning with the use of courts, skylights, etc., may accomplish a pleasant and controlled environment.

TRANSPORTATION

The site location should be convenient to public transportation: bus and streetcar.

Heavy traffic should be barred from the area. It should be convenient for private autos and taxis.

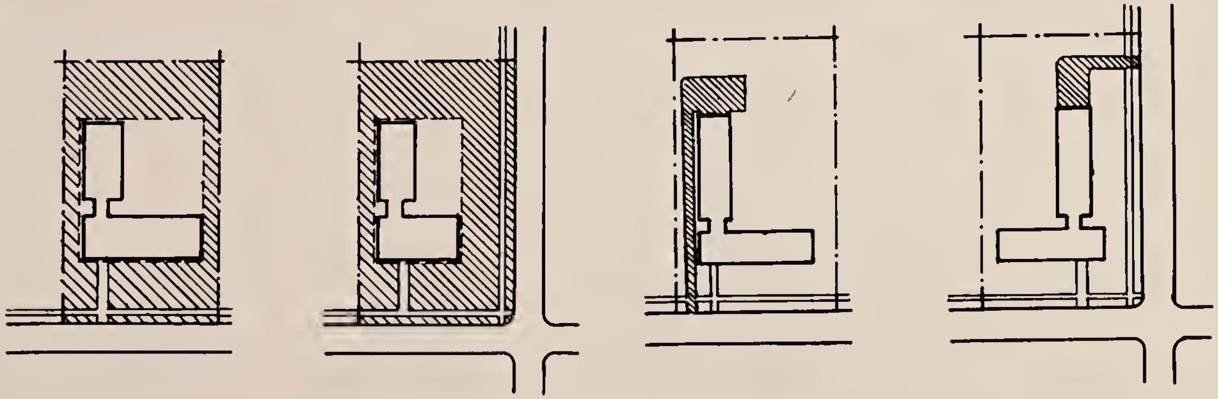
PROTECTIVE ORDINANCES

Before purchasing the site, check local ordinances and deed restrictions to confirm that construction of a rehabilitation center is permissible.

Check the zoning laws to confirm that the site is protected from undesirable projects on neighboring properties. If the area is not zoned, purchase of a much larger lot is recommended in order to achieve protection in depth.

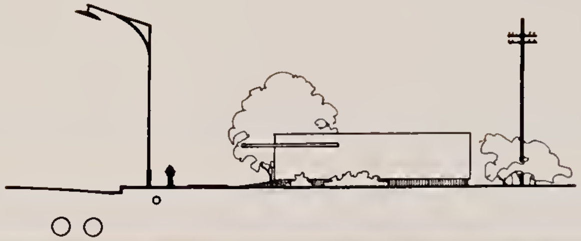
Check the building set-back regulations in local ordinances.

A corner lot frequently has less buildable land and is more costly. However, a corner lot may reduce the amount of road construction on the lot and permit better traffic circulation around the building.



UTILITIES

The site should have access to water, electricity, gas, telephone service, sanitary sewer, storm drainage, street lighting, and fire protection. If utilities are lacking, check the feasibility and cost of private water supply, sewage disposal, and drainage; or investigate the cost of extending existing services.

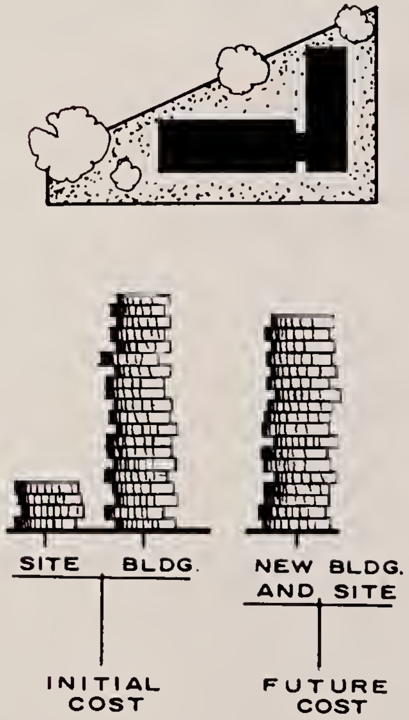


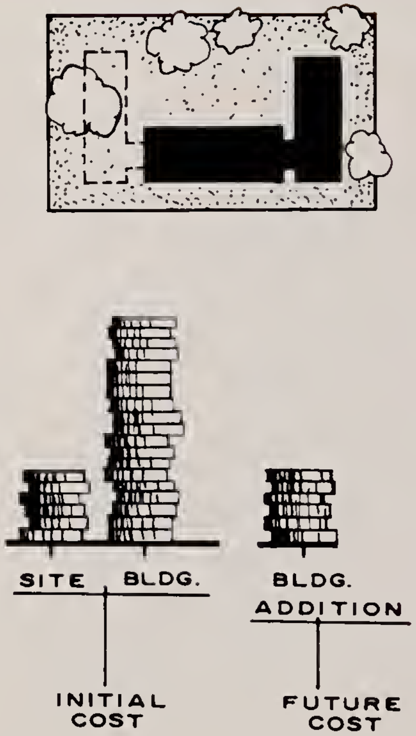
COST

To compare the cost of an unimproved lot with the fully improved lot, add to the cost of the unimproved lot:

- i) cost of street and walks;
- ii) cost of sanitary and storm drainage;
- iii) cost of street lights;
- iv) cost of water and fire protection.

If utilities are to be extended, determine when improvements will be made and what the assessments will be. A shallow sewer may necessitate installation of pumps or limit plumbing in the basement. It is good policy to economize on the initial building rather than on the cost of the site.





VI. Areas of Activity

A. MEDICAL

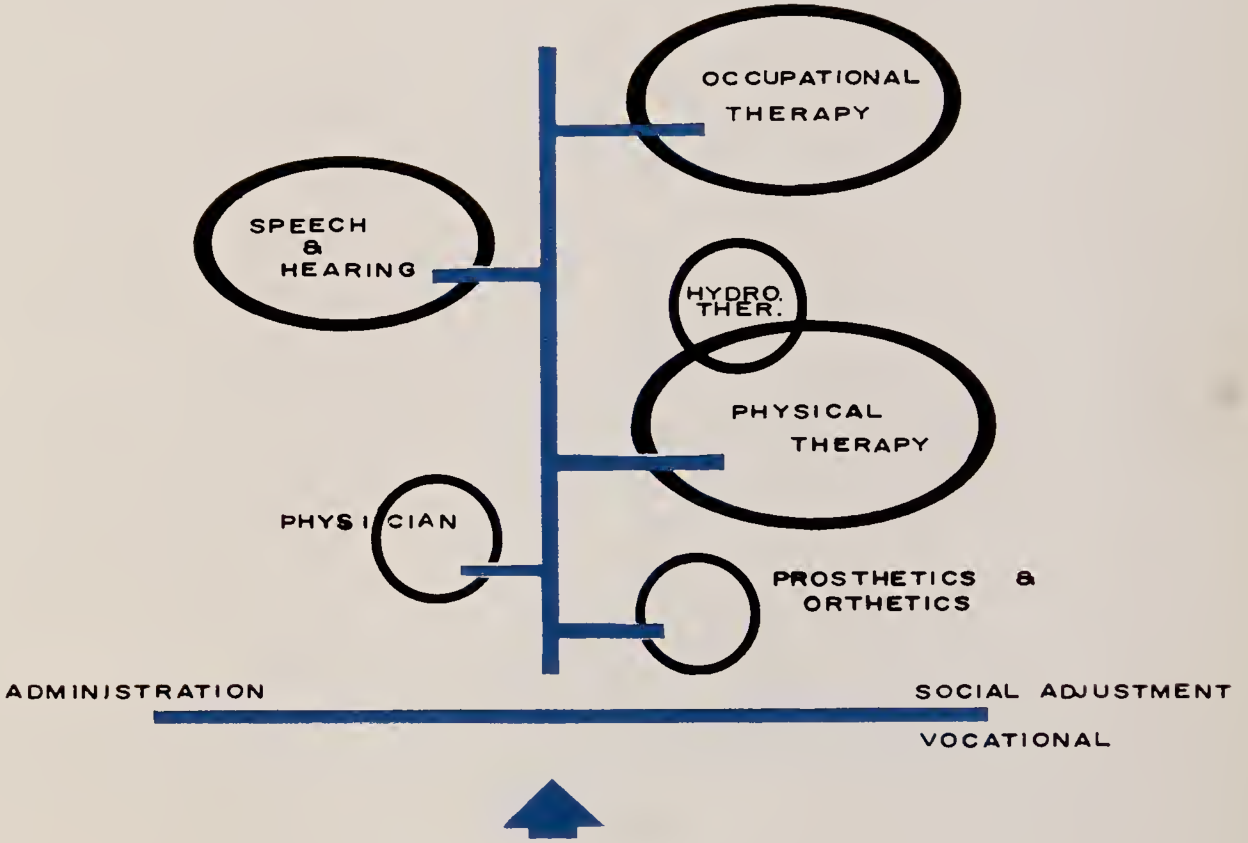
The medical area of a rehabilitation center provides the following services: medical evaluation, performed by the physician and his staff; physical therapy, including hydrotherapy; occupational therapy; speech and hearing therapy. It also furnishes the services of a prosthetic and/or orthetic appliance shop. The detailed character of the medical area will vary with the program of the center itself.

The emphases in the medical program will be determined by the needs of the patients and by already existent community medical facilities.

The medical area provides the basis for the patients' total program at the center. It must be accessible to all other areas and be well integrated with the administration and admissions services.

This section will contain much specialized examination, treatment, and therapy equipment. Some of this will be heavy, requiring a floor designed to accommodate such concentrated loads; the electrical service to these machines is important.

Patients will be wearing lightweight examination or treatment gowns here, and the heating system will have to compensate for this. The records for all sections of this area are extensive; therefore, adequate storage for them is mandatory. Conferences with patients and staff make further demands on the available space. Many different kinds of activities will be housed here and the space needs to be adjustable accordingly. Accessibility to all other areas is also essential for the medical area of activity.



1. PHYSICIAN

Medical diagnosis is the basis for development of the patient's successful rehabilitation program.

On admission, a medical examination is essential, whether the patient is prescribed a program in one or several of the center's areas of activity: physical medicine, social adjustment, or vocational rehabilitation. A nurse is usually present during the examination.

Complete evaluation of the patient may require the services of consulting medical specialists, staff specialists in the several medical therapies, psychologists, social workers, and vocational counselors. A total integrated program is developed for the patient, with medical considerations as the initial frame of reference.

Location Within Building

As all patients receive medical evaluation, the physician's unit should be near the center's main entrance.

For purposes of admission, and for the keeping of records, location of the unit near the administrative department is desirable.

If an in-patient nursing unit is included, the physician should have, if possible, convenient access to the nursing unit.

In smaller centers, the main waiting room for the building may serve as the waiting area for the physician's unit.

Place the unit in a quiet zone.

Staff-Patient Ratios

The physician-patient ratio will depend entirely on the nature of the program. Centers accommodating in-patients will necessarily need a greater amount of physician service per patient than the out-patient type of center.

Physician-patient ratios can be established only on an individual basis.

Organization of Space

The physician's unit should form a self-contained area, with access to the consultation room and the medical examination room by means of a sub-corridor, if possible.

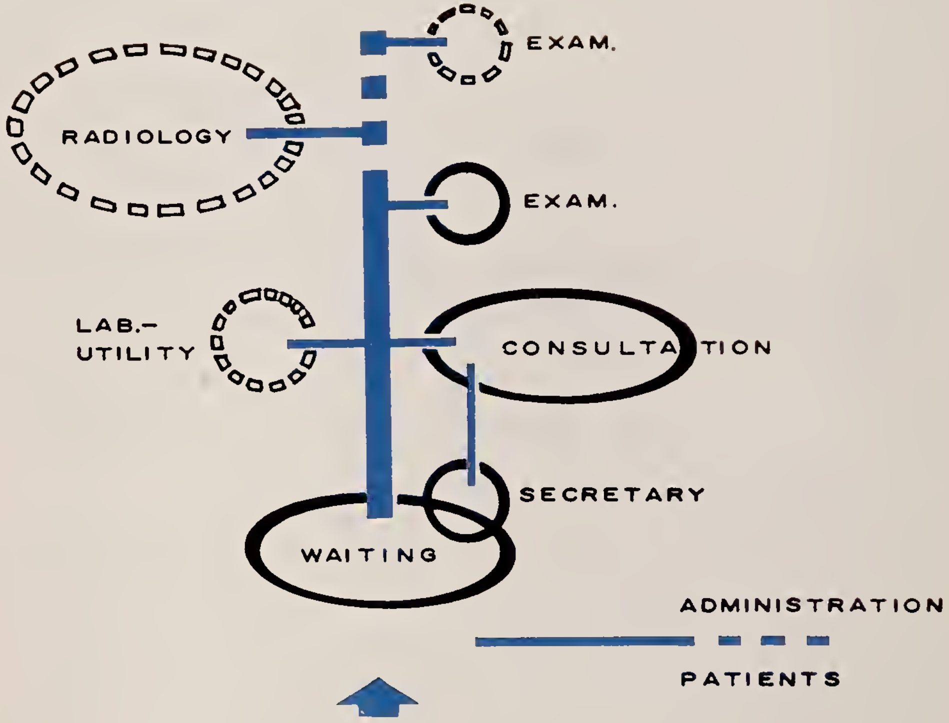
To make full use of the physician's time, there should be two examination rooms for each consultation room.

Recommended for the area is a toilet designed for wheel chair occupancy, accessible from the examination room.

Although a clinical scale is essential equipment for the examination room, a wheel chair patient's scale constructed from a modified platform scale is very desirable. These scales should be conveniently accessible from the other parts of the building and may be placed in the physician's unit, or near the physical therapy exercise room or gymnasium.

Waiting Room

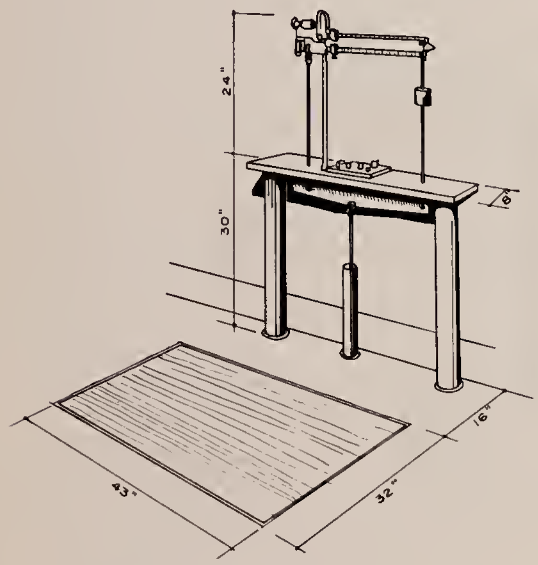
Arrange the furniture to allow space for wheel chair patients. Also, include coat hanging facilities.



Secretary

Include in the furnishings a secretary's desk, writing table, and letter size file cabinets.

As certain records must be available to department heads in other areas of the center, placement of such files in the central records room of the administrative area is the usual practice. However, some centers prefer to keep medical records in the physician's unit. A physician's records are traditionally privileged communications, and, if kept in the central records room, should be made available only to the responsible professional personnel.



WHEEL CHAIR PATIENT SCALES

Consultation Room

Include in the furnishings for the physician's office and consultation room an executive desk and chair, book shelves, and film illuminator. Allow space for two visitors' chairs and a wheel chair. Provide a convenient coat closet.

Examination Room

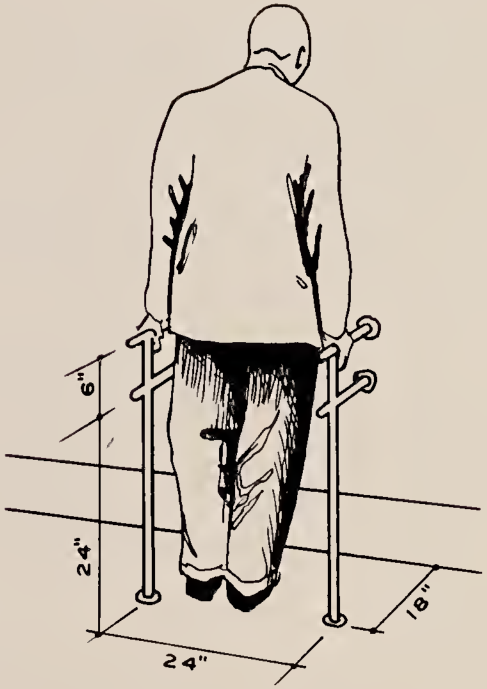
Include in the furnishings for this room an examination table with clearance on all sides, an examination light, a lavatory and mirror, clinical scales, a film illuminator, an instrument and supply closet, a small electric pressure sterilizer (if no lab-utility room is provided), and a chair. Standing bars are optional equipment.

Lab-Utility Room

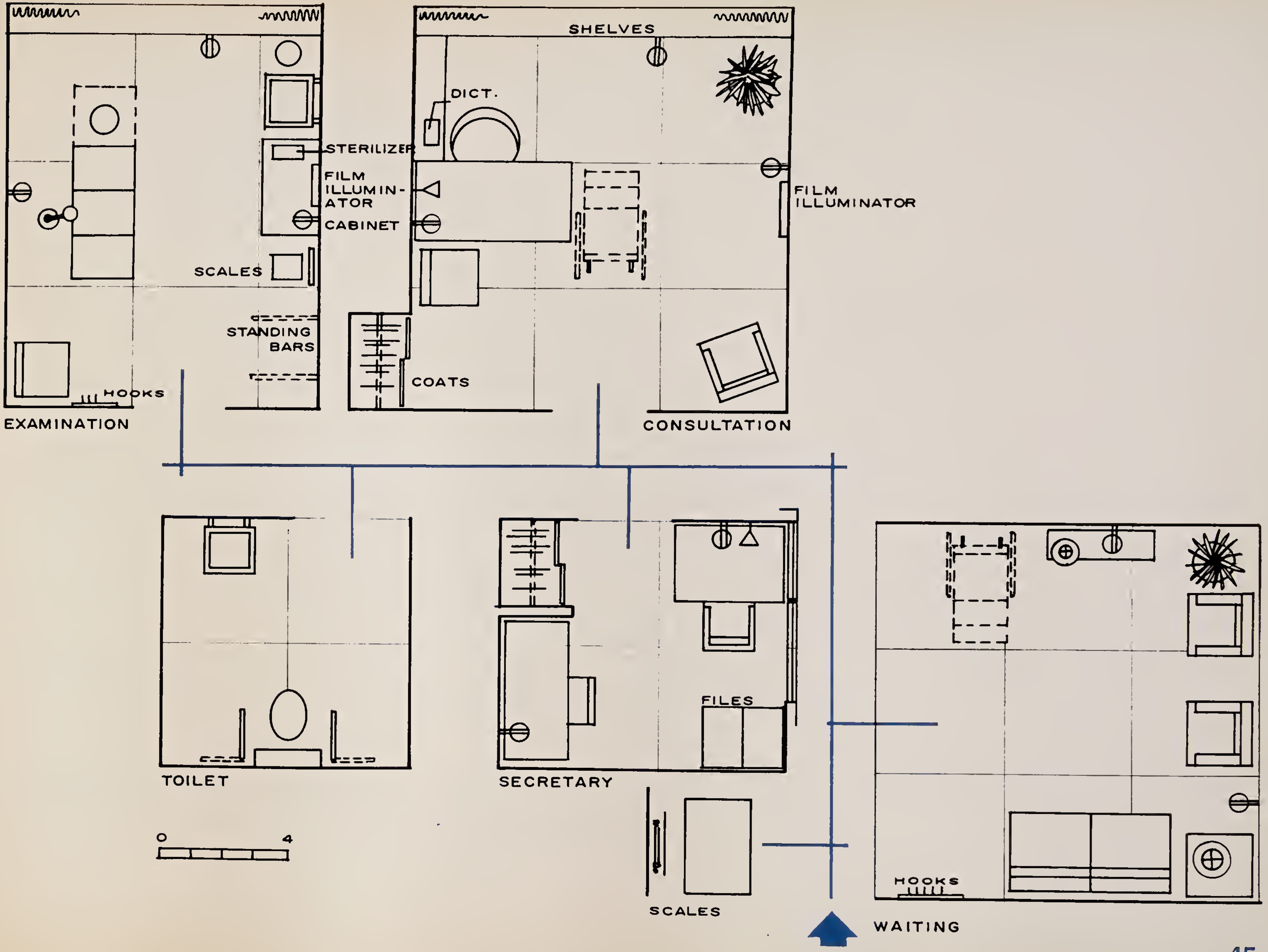
If a lab-utility room is provided, equip it with a pressure sterilizer, sink, plaster cart, work counter, and storage cabinets.

Radiology

Radiology is usually provided for rehabilitation centers by X-ray departments of hospitals, clinics, and other institutions. If radiology is to form a part of the center's services, standard practice in the design and construction of the department should be followed.



STANDING BARS


SHELVES
DICT.
STERILIZER
FILM ILLUMINATOR
CABINET
FILM ILLUMINATOR
SCALES
STANDING BARS
HOOKS
COATS
EXAMINATION
CONSULTATION
TOILET
FILES
SECRETARY
0
4
SCALES
HOOKS
WAITING

2. PHYSICAL THERAPY

Physical therapy is administered under medical supervision and performed by graduates of a school or course approved by the Council on Medical Education and Hospitals of the American Medical Association.

The objectives of physical therapy are to correct or alleviate bone and joint or neuromuscular disabilities. This entails a concern with all types of physical disabilities, such as neurological diseases, arthritis, amputation, paralysis, spasticity, structural and postural malalignments, crippling accidents, post-surgical conditions, etc. Measures are used to retain or re-establish circulation, muscle tone, co-ordination, joint motion leading to mobility, ambulation, and activities of daily living.

In carrying out his aim, the therapist will make use of heat, cold, water, light, and electricity as well as the training effects of active, passive, resistive, and re-education exercises.

Organization of Space

There should be two major treatment areas, dry and wet. The dry area includes the exercise room or gym and treatment cubicles; whereas the wet area includes all hydrotherapy treatment, tanks, pools, and related facilities.

Hydrotherapy equipment should be grouped in one area, separate from, but adjacent and accessible to other treatment areas.

Space considerations for a physical therapy department must take into account circulation areas for patients and staff. Situate the equipment for efficient and safe use, and provide storage space for equipment and supplies.

Flexibility and expansion of facilities should be considered in basic planning to meet changes in requirements.

It is advisable to consult with the chief physical therapist, the center's director, and the center's physician to determine equipment needs and the program of activity for this department.

Location Within Building

The place for physical and occupational therapy, as well as for activities of daily living, should be in close proximity, as many patients will receive treatment and training in all three areas.

Arrange the areas so that scheduled patients may proceed directly to physical therapy without interfering with circulation to other departments.

As physical therapy may take advantage of certain outdoor activity, place the exercise room or gym near the outdoors.

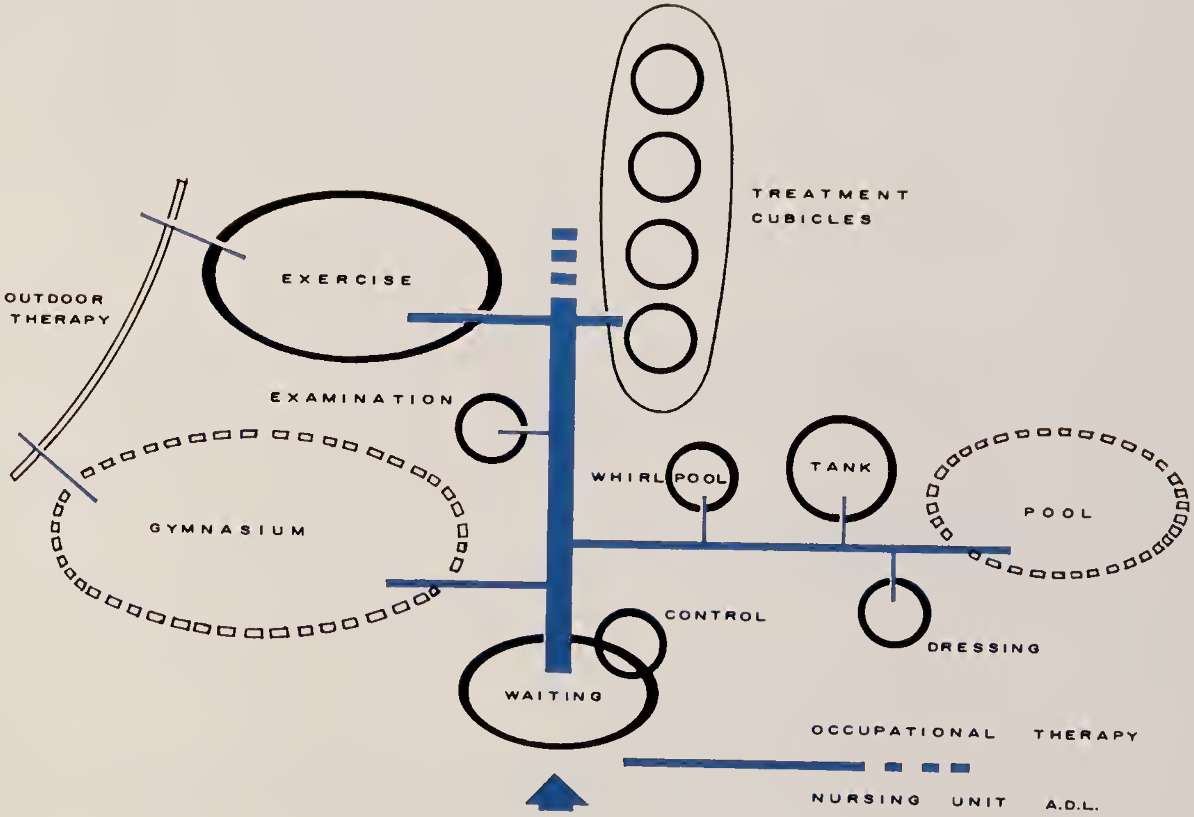
As physical therapy involves some noisy activity, this area should be removed from quiet zones, such as the place where speech and hearing therapy is administered, or the nursing unit.

The area should be convenient to the center's physician and the nursing unit (if provided).

Staff-Patient Ratios

One physical therapist can treat an average of ten to fifteen patients per day. Group services may increase this to twenty.

If the physical therapist is assisted by nonprofessionals and if the work space and scheduling are well planned, a maximum staff-patient ratio may be achieved. Nonprofessional assist-



ants, paid or volunteer, can be trained to prepare patients for treatments, attend to equipment, and transport patients, if necessary.

There are many variables involved in staff-patient ratios. A report on fifty-nine rehabilitation centers in twenty-three states by the United States Public Health Service* gives the following relationship between physical therapists and volume of service.

Volume of service (visits per week)	Centers reporting	Measure of service—Median number		
		Visits per week	Treatment hours per week	Number of therapists
Less than 100	15	60	72	2
100-199	13	142	130	4
200-399	15	272	265	5
400 or more	13	538	555	17

A visit is defined here as a single appearance of a patient in the department for treatment. A patient coming to a physical therapy department one morning, for example, may receive hydrotherapy and exercise; this constitutes two treatments, but only one visit.

Treatment Cubicles

Divide the cubicles with curtain tracks for easy access by wheel chair and stretcher patients, and for flexibility in use of space, as for instructional activity or gait training. Curtains should not extend to the ceiling or floor, so that, when drawn, they may not interfere with ventilation.

Equip cubicles with a treatment table with adequate work space on each side and at the head. Treatment tables with drawers or shelving provide convenient storage space for sheets and other requirements.

Provide in the cubicles a place for the patient's outer clothing, such as hooks or lockers.

Provide a lavatory convenient for the therapist's use.

Equipment for this department may include infrared and ultraviolet lamps, diathermy, hot pack and electrical stimulation apparatus, ultra-

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*Equipment Planning Branch and Program Evaluation and Reports Branch, Division of Hospitals and Medical Facilities, Public Health Service, Washington, D. C., **Hospitals,** J.A.H.A., March 16, 1958.

sonic equipment, suspension apparatus (Guthrie-Smith), electrical diagnostic apparatus, moist heat equipment, sand bags, powder boards, powder, oil or lotion, alcohol, and linen.

In many cases patients will be lying on their backs during treatments. Ceiling lighting should be indirect or semi-indirect to avoid glare. Therapists making tests or examinations require shaded or non-glare spotlights.

A small table should be available for specific hand treatment.

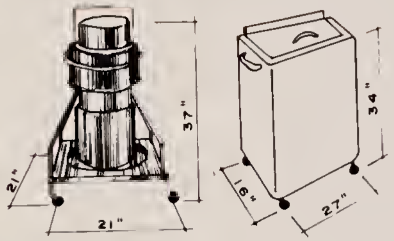
Place receptacles in each cubicle for electrical equipment, 36" to 48" from floor. Receptacles should be grounded, and it is desirable to fuse each piece of equipment separately to assure uninterrupted service. Use a three-pole attachment plug.

If use of ceiling apparatus is contemplated, reinforce the ceilings for necessary attachments.

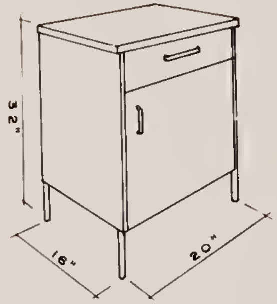
There should be convenient to treatment cubicles a utility area provided with sink, drainboard, and work counter, with storage above and below; a laundry hamper is also needed.

For most efficient use, arrange equipment so that it does not require too frequent relocation by the therapist.

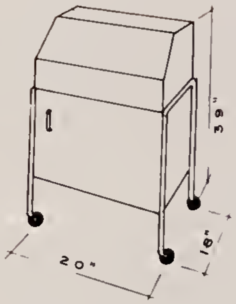
In smaller physical therapy departments, cubicles should be near the exercise room for ease of supervision of the total area by the therapist.



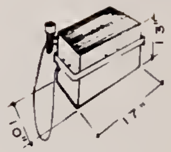
LARGE HOT-PACK MACHINES



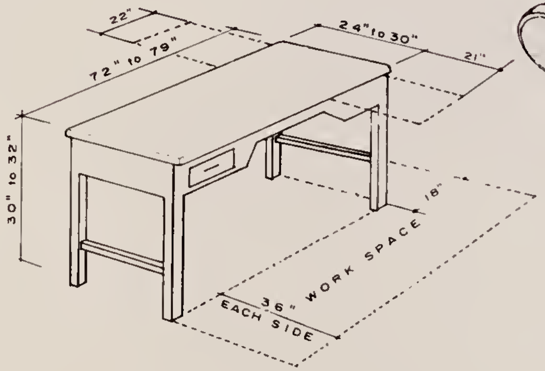
STORAGE CABINET



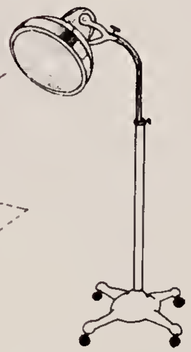
LOW-VOLT GENERATOR

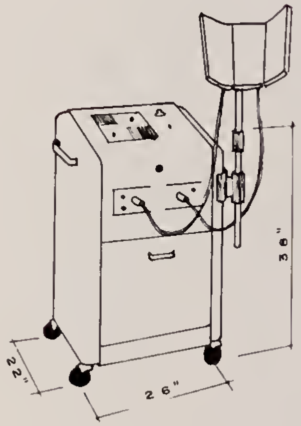


ULTRASONIC GENERATOR

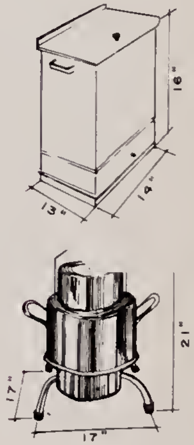


TREATMENT TABLE


TREATMENT LAMP



DIATHERMY UNIT



SMALL HOT-PACK MACHINES

Waiting Area

Provide space for wheel chair and ambulant patients; and if there is a nursing unit, space also for a stretcher.

Place the therapist's office near the waiting area for control.

From the waiting area, the patient should be able to go to the exercise room, hydrotherapy, or treatment cubicles with a minimum interference of activities.

Therapist's Office

There should be staff office space for interviewing patients and attending to administrative duties, as well as space for files, and a desk with a dictating machine.

Partition the office so that interviews may have acoustical privacy.

Situate it near the patients' entrance to the physical therapy department and design it to provide maximum supervision of activities.

A patient scheduling board and writing surface are recommended. Locate them conveniently for all physical therapists.

Staff lockers and dressing rooms (separate from patients) should be near this department.

Examining Room

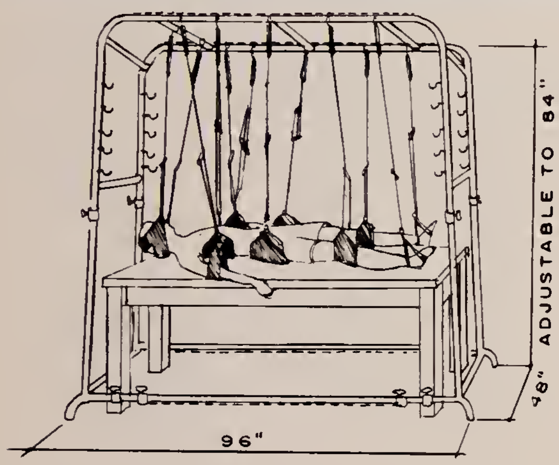
The room should be convenient to the entrance of the physical therapy department.

Equip it with an examination table, lavatory, and space for examination equipment.

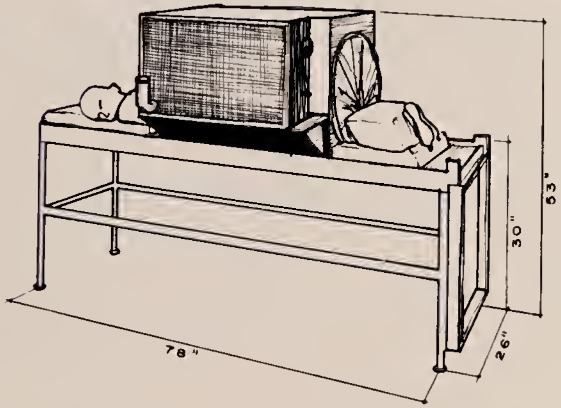
Provide floor-to-ceiling partitions for privacy.

The room may be used for special tests and measurements, or for treatment when privacy is desirable.

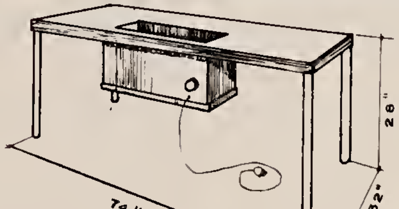
Scales for weighing patients (including patients in wheel chairs) are sometimes provided in this room.



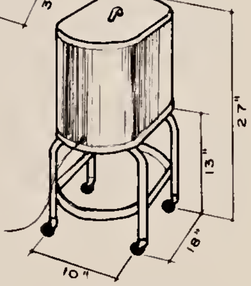
GUTHRIE-SMITH SUSPENSION APPARATUS



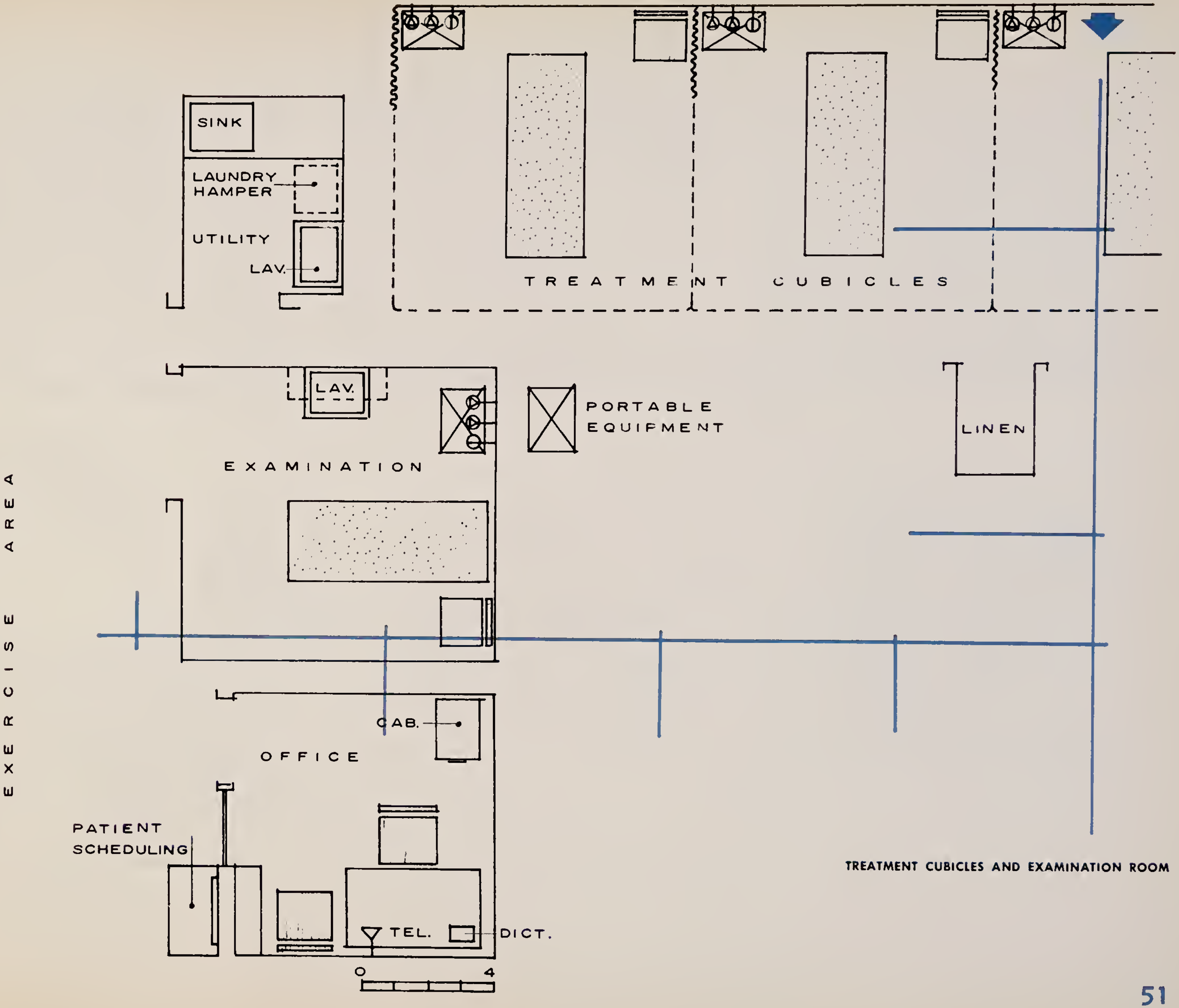
MOIST AIR HEAT THERAPY



PARAFFIN BATH IN MASSAGE TABLE



PORTABLE, HAND, ELBOW, AND FOOT PARAFFIN



TREATMENT CUBICLES AND EXAMINATION ROOM

Exercise Area

This area should be a flexible, clear space for individual and group exercise activities.

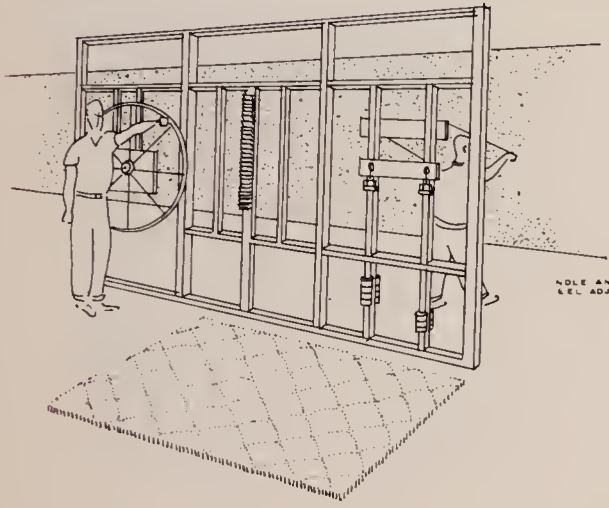
The most frequently used items of equipment are: exercise mats (sometimes raised 24" off the floor for the convenience of therapists and wheel chair or crutch patients—if area is of sufficient size, mats may remain in place), shoulder wheel, shoulder overhead and wall weights, shoulder ladder, steps, curbs, ramps, stall bars, parallel bars, posture mirror, stationary bicycle, counterbalanced and individual weights, sand bags, and paraffin bath. Some of this equipment may be made by a skilled carpenter rather than purchased. Purchased equipment should be accompanied by satisfactory repair and maintenance service.

Certain equipment relationships should be maintained. Place the posture mirror four feet from the end of the parallel bars. When mats and other movable equipment are removed, there should be sufficient space for gait training, also related to a posture mirror.

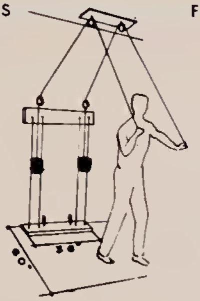
Doors to the exercise area should be wide enough to accommodate not only patients, but also equipment. Double doors, each three feet wide, are recommended.

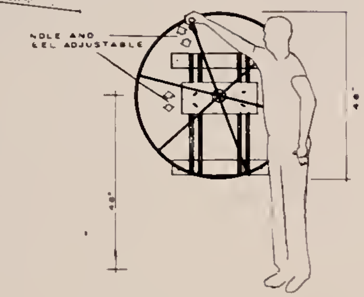
The layout shown suggests a minimum exercise area for a physical therapy department with one therapist and an aid. For an expansion of the exercise area see "Gymnasium" in this section.

The exercise area may be divided by open partitions which allow for the attachment of equipment and sub-dividing of activities, yet which permit circulation of air and easy supervision of the total area.


EXERCISE EQUIPMENT DIVIDER

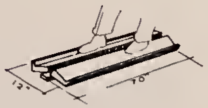
CHEST WEIGHTS

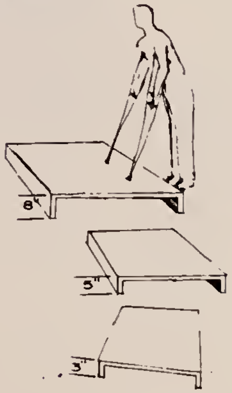




SHOULDER WHEEL

FOOT INVERSION TREAD



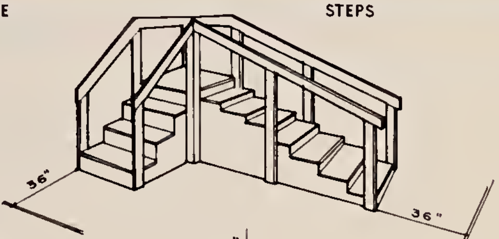


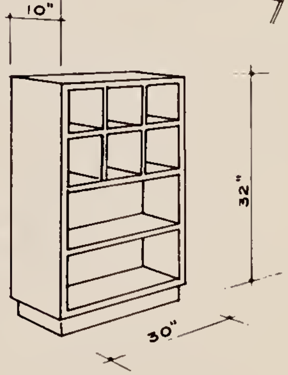
CURBS

BICYCLE

ROWING MACHINE

STEPS





WEIGHT STORAGE

An observation cubicle with one-way vision glass may sometimes be used to advantage in order that visitors will not interfere with patients' activities.

Reinforce the walls for installation of exercise equipment, such as stall bars.

Provide storage for equipment not in use.

Toilets should be accessible to the patients and designed for those who are confined to wheel chairs.

A wall clock in the room for timing exercises is recommended.

Vinyl wall covering to a minimum height of five feet will protect walls and ease maintenance.

There should be adequate ventilation. Fresh air without drafts in the exercise and treatment cubicles is very important. Air conditioning of this area is highly desirable.

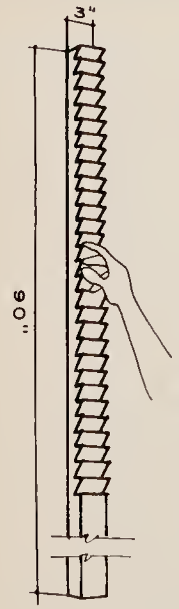
Windows or room exposure should be designed to provide privacy within the exercise room.

Gymnasium

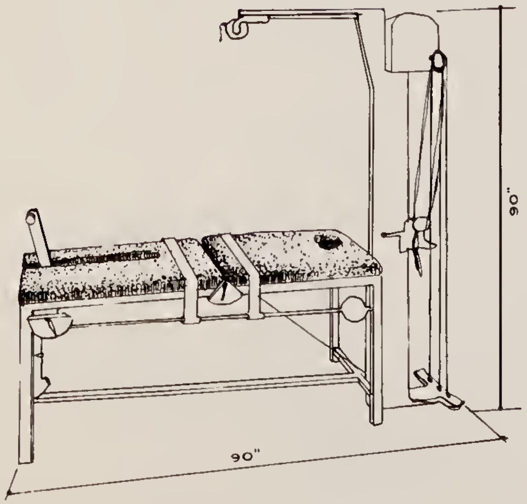
In larger centers or centers with in-patients, a gymnasium is recommended. It serves a variety of uses, such as individual and group exercises, recreational programs, and meetings.

The gymnasium will augment the program of the physical therapy exercise room, permitting the therapist to conduct group wheel chair and mat classes. The room should be furnished with parallel bars, wall bars, stairs, curbs, gradients, wall mirrors, etc., for individual instruction.

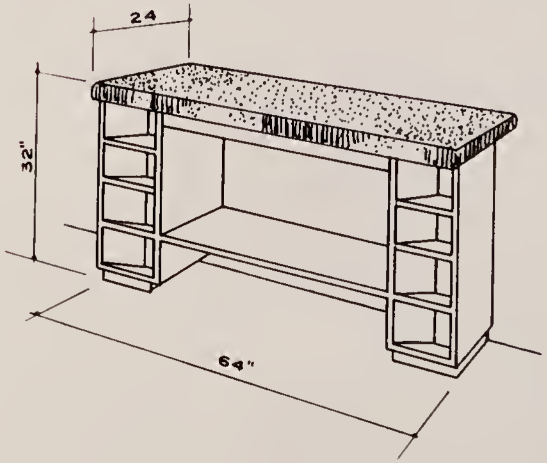
The room will also be used for recreational activity such as group volleyball, basketball, moving pictures, and wheel chair square dancing.



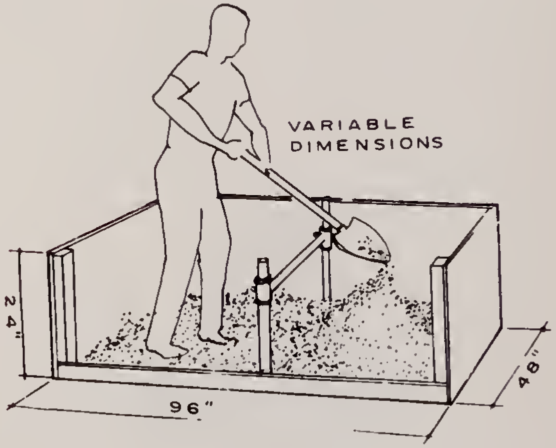
SHOULDER LADDER



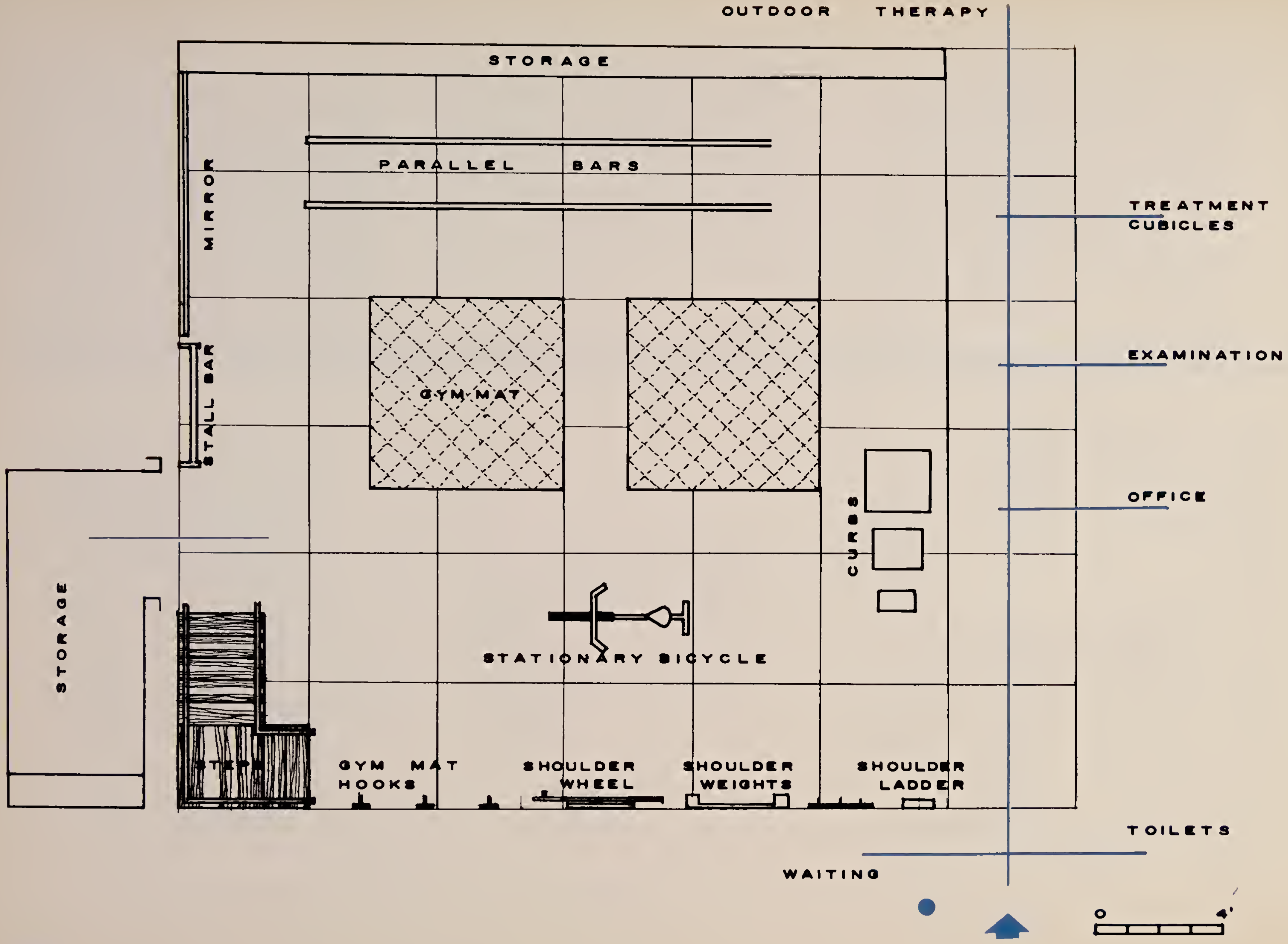
DELORME EXERCISE EQUIPMENT

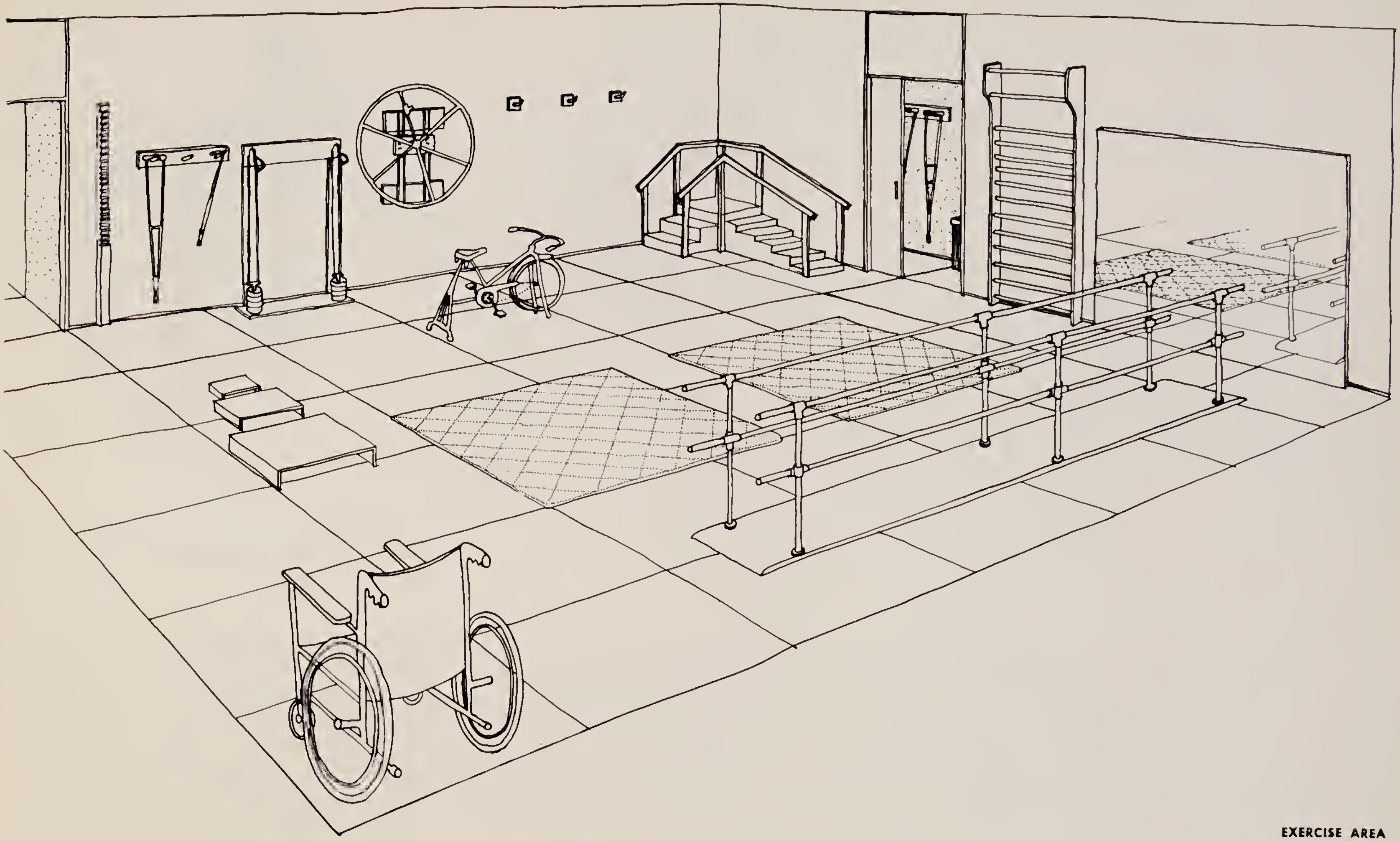


EXERCISE TABLE WITH WEIGHT STORAGE



SHOVELING BOX


OUTDOOR THERAPY
STORAGE
PARALLEL BARS
MIRROR
TREATMENT CUBICLES
GYM MAT
EXAMINATION
STALL BAR
OFFICE
CURBS
STORAGE
STATIONARY BICYCLE
STEPS
GYM MAT HOOKS
SHOULDER WHEEL
SHOULDER WEIGHTS
SHOULDER LADDER
TOILETS
WAITING
0
4'



EXERCISE AREA

A minimum clear ceiling height of 14′ is recommended. If the gymnasium meets standard space requirements, rental of its use to community athletic organizations will be facilitated. Providing a recreational program is particularly important where in-patients are involved.

The gymnasium will also be used by the social group worker in the social adjustment program of some patients.

As the gymnasium is a multi-purpose room, equipment and furniture within the area should be movable. Provision for its storage is essential.

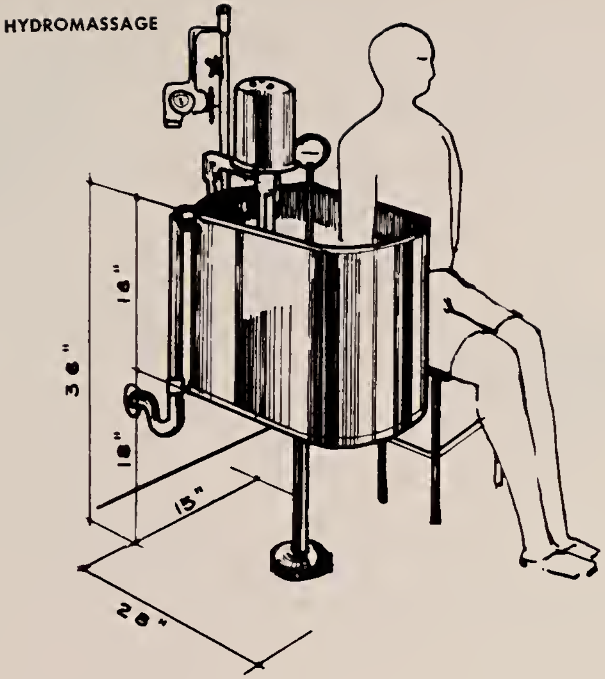
As a meeting room to be used by selected groups within the community, this facility provides an excellent opportunity to acquaint the public with the problems of rehabilitation and to arouse interest in the center's program. For this purpose, the gymnasium should be easily accessible to the public.

To make maximum use of this multi-purpose room, it is important that activities be controlled to avoid conflicting schedules.

Hydrotherapy

The space for hydrotherapy is frequently the most expensive area of the center; consequently, it should be planned with considerable selectivity.

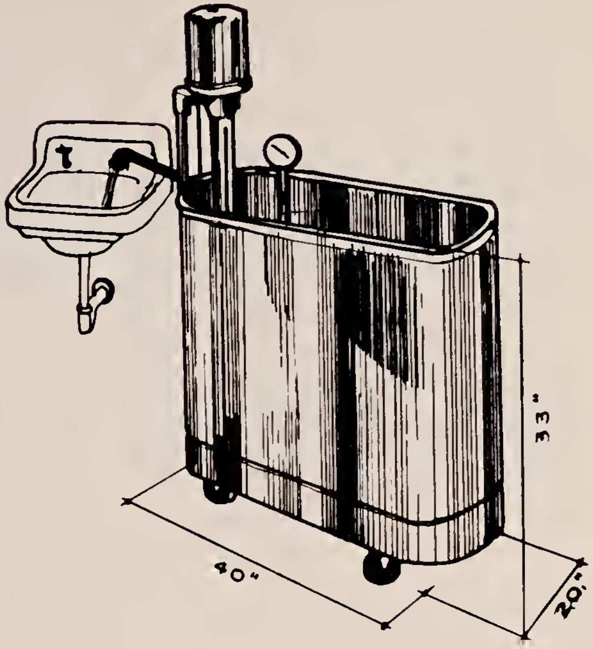
Whirlpool tanks for arm, foot, hip, and leg immersion are considered inadequate by many centers serving multiple disabilities unless augmented with facilities for complete body immersion.



STATIONARY ARM TANK

Almost all exercises and treatments can be conducted with a Hubbard tank and a wading pool and tank. Combinations of Hubbard tanks with wading facilities are available where space is limited.

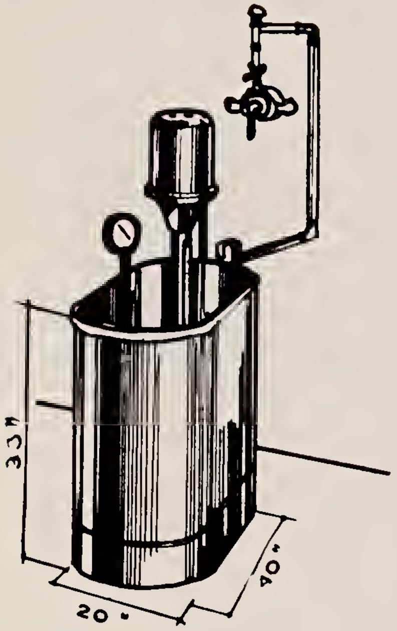
Therapeutic pools are expensive to construct; consequently, they are usually considered only for larger centers.



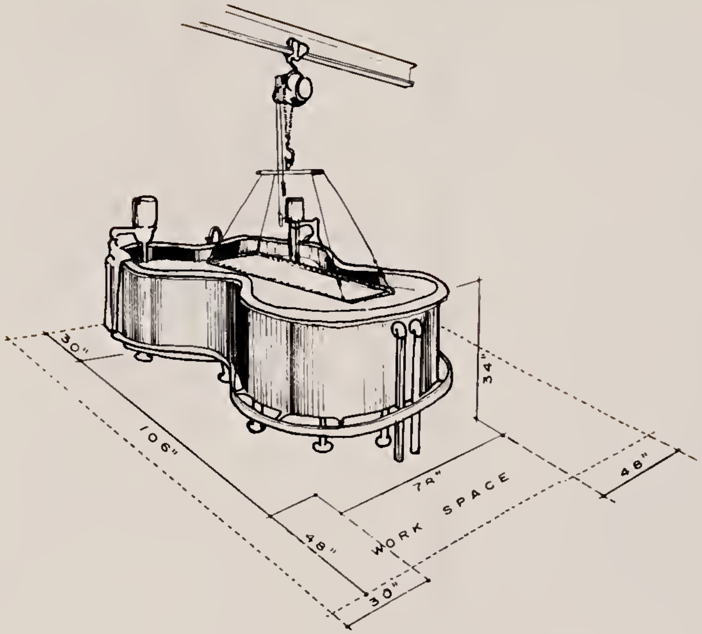
MOBILE COMBINATION ARM, LEG, AND HIP TANK

All hydrotherapy activities require linen and towel storage. Also provide a wringer and dryer for bathing suits and a storage space for wet and dry bathing suits of both staff and patients.

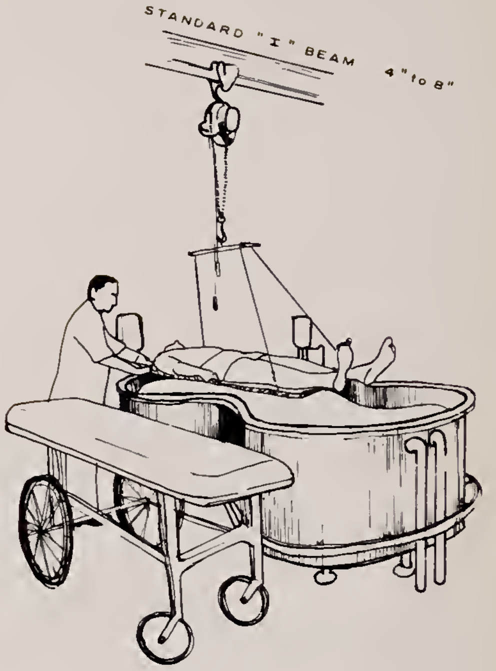
Tank and pool areas require storage space for wheel chairs and stretchers, adequate dressing cubicles, or dressing rooms to permit maximum use of pool, showers, and toilet facilities.



STATIONARY COMBINATION ARM, LEG, AND HIP TANK



TREATMENT TANK



MINIMUM CEILING HEIGHT 9'-6"
TOTAL WEIGHT OF TANK FILLED
4,425 LBS.

As hydrotherapy is a moderately noisy activity, it should be removed from areas requiring sound control.

Floors should be of unglazed ceramic tile with drains for spilled water and tank overflow.

As equipment is heavy when filled with water, a structure must be designed for these additional loads.

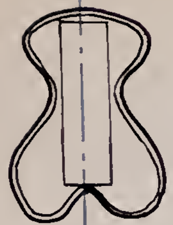
Overhead monorails with lift mechanism are essential for efficient use of Hubbard tanks and waders. Ceilings should be a minimum of 9'-6". The location of the monorail with proper relationship to equipment is essential.

All pipes for hydrotherapy should be accessible but concealed. Waste lines should be adequate for rapid changes of water.

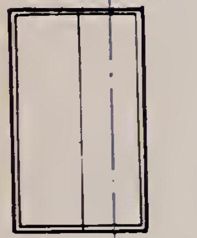
All hydrotherapy equipment should have thermostatically controlled mixing valves. Adequate pressure and an ample source of 160-degree F. water is essential.

Humidity reduction is a major concern in planning the hydrotherapy department. Adequate air conditioning is essential for the comfort of patients and staff.

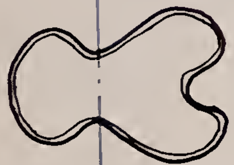
"I" BEAM RELATIONSHIP TO TANKS AND POOLS



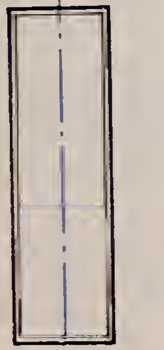
COMBINATION TREATMENT AND WADING TANK



WADING AND UNDERWATER EXERCISE TANK



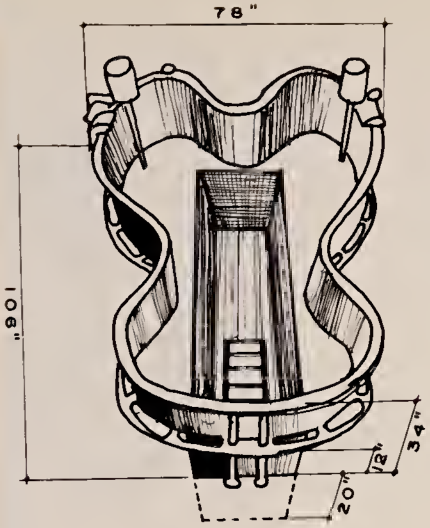
HUBBARD TYPE TANK

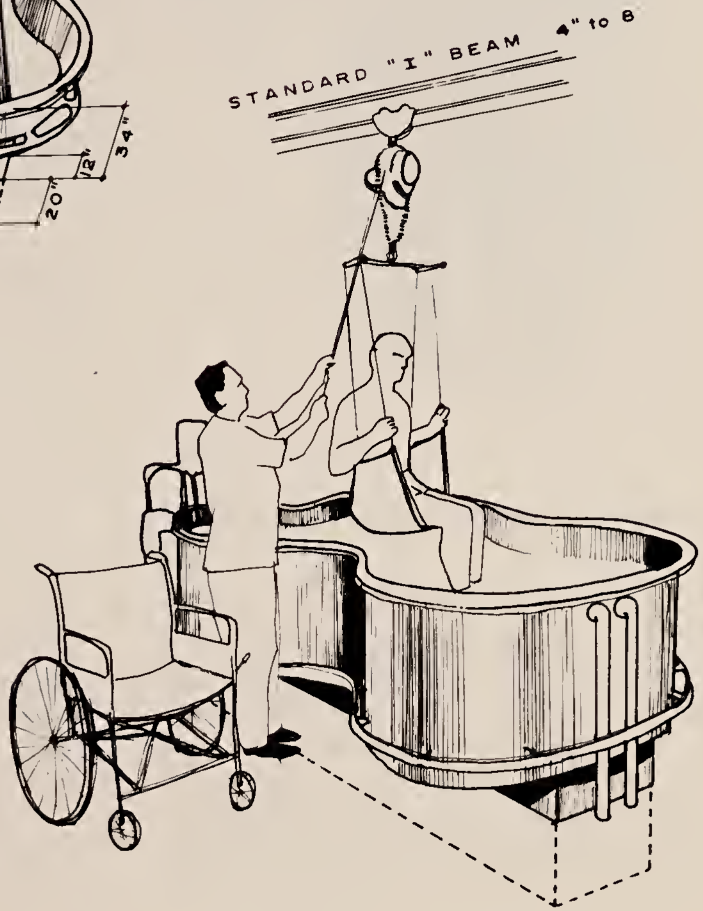


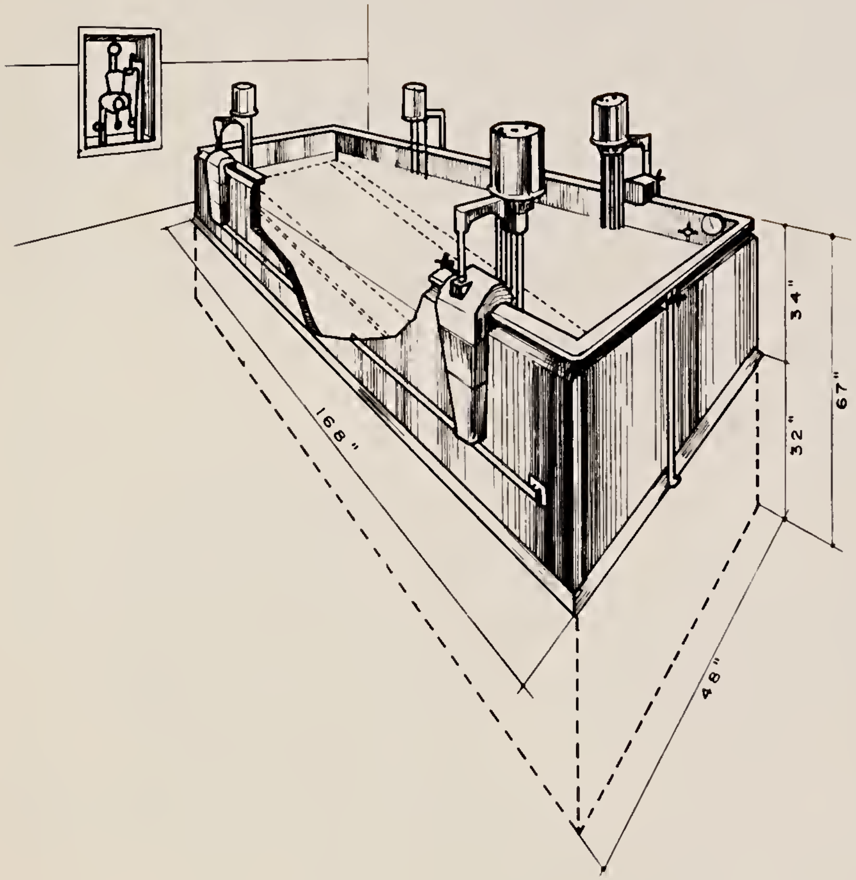
TANK AND POOL

COMBINATION TREATMENT AND WADING TANK

MINIMUM CEILING HEIGHT 9'-6"
TOTAL WEIGHT OF TANK FILLED 7,300 LBS.

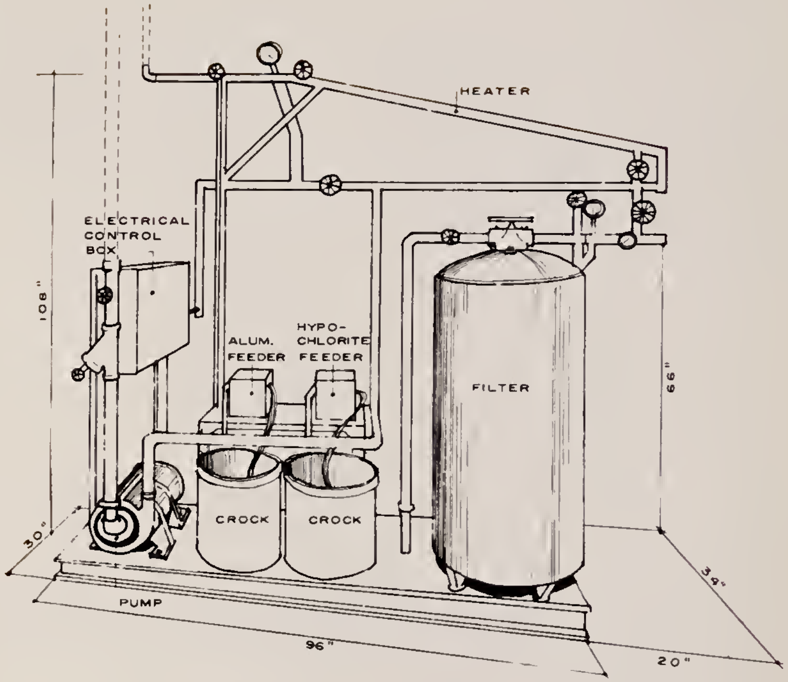






TANK AND POOL

MINIMUM CEILING HEIGHT 9'-6"
TOTAL WEIGHT OF TANK FILLED
21,000 LBS.



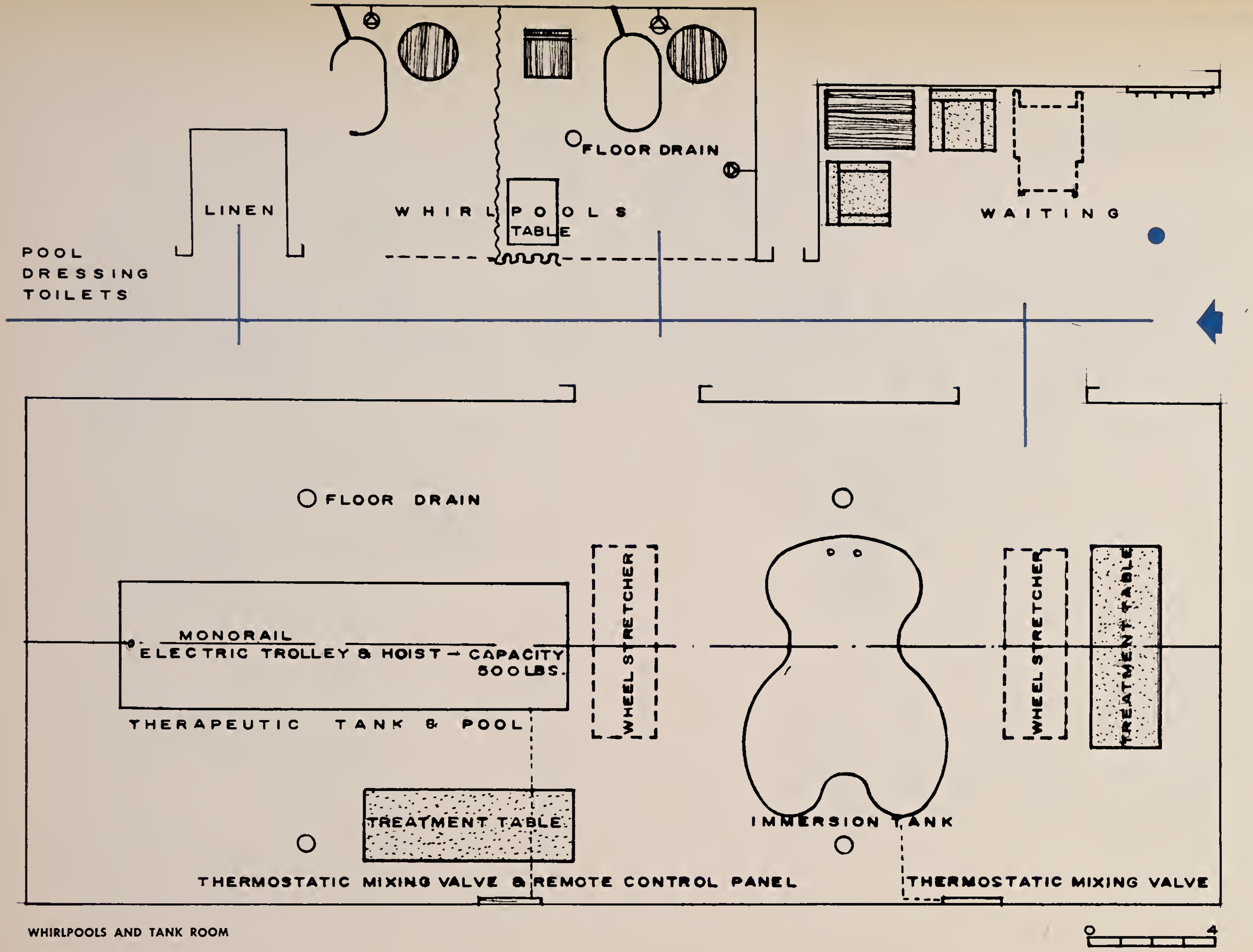
RECIRCULATOR UNIT

Whirlpools

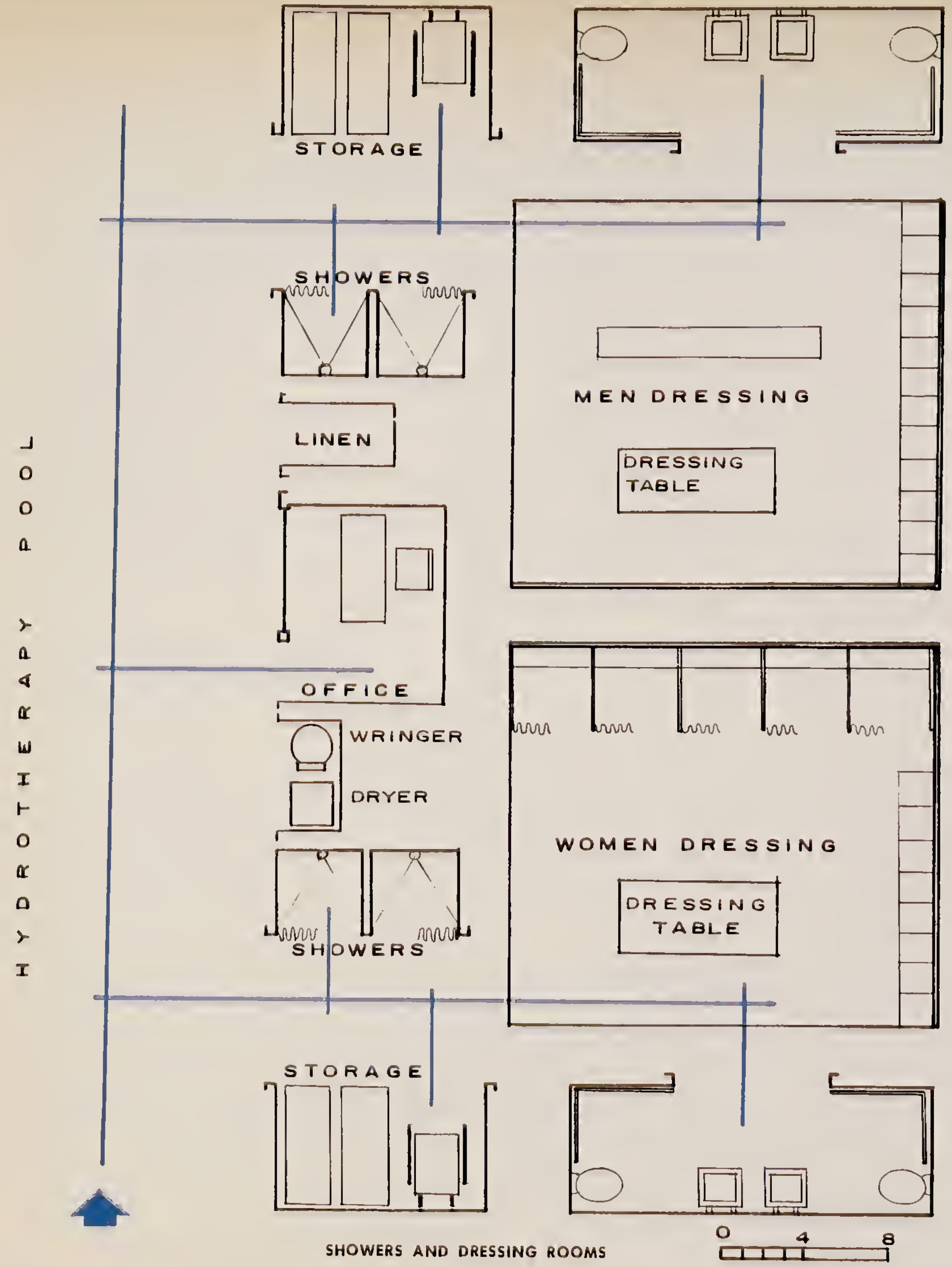
This includes equipment for the treatment of arms, hips, and legs. Some models are available as movable units, in which case a sink or lavatory is required in the cubicle for drainage of the unit.

Provide space for chair, table, and a stool of adjustable height.

In small centers where hydrotherapy equipment consists only of whirlpool tanks, place them near treatment cubicles and near the exercise room for easy supervision by the therapist.



WHIRLPOOLS AND TANK ROOM



SHOWERS AND DRESSING ROOMS

Tank Room

A treatment table with storage space is an essential requirement.

Allow space for wheel stretchers and provide 44" wide doors. (A 56" wide opening is necessary to install combination treatment and wading tank.

Allow space for stretcher and wheel chair storage.

Showers and Dressing Rooms

Directly related to the efficient use of a hydrotherapy pool is the provision of adequate dressing room facilities.

Dressing facilities indicated do not necessarily have a size relationship to the pool indicated. For example, some programs will require several dressing tables to accommodate the patients.

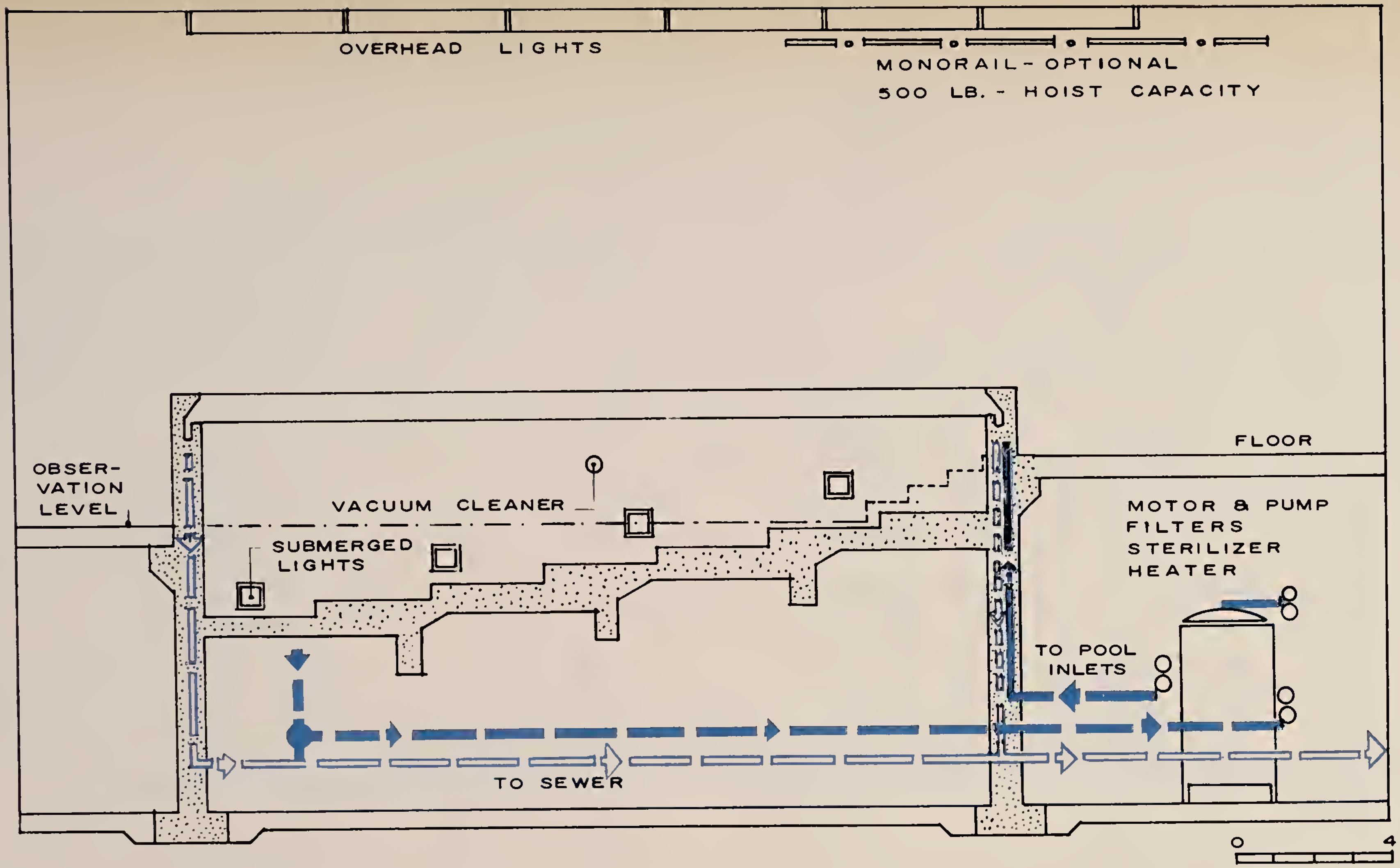
For design details of showers and toilets, see Section VI. D. In-Patients.

Hydrotherapy Pool

Many variations in size are possible.

The depth of the pool should be graduated. Variations of depth in 5" increments are recommended. For children the shallow end should be 2'-0" deep, for adults, 3'-0". The deep end of the pool should be 5'-0".

There should be a continous gutter around the pool for the use of the patients and for the purpose of attaching plinths.



LONGITUDINAL SECTION

A portion of the floor surrounding the pool may be depressed to form an observation area for the therapist.

Provide space for such mechanical equipment as the heater, sterilizer, filters, pumps, etc.

Provide facilities for cleaning the pool.

A monorail with hoist is frequently considered desirable. Allow space for wheel stretchers and wheel chairs.

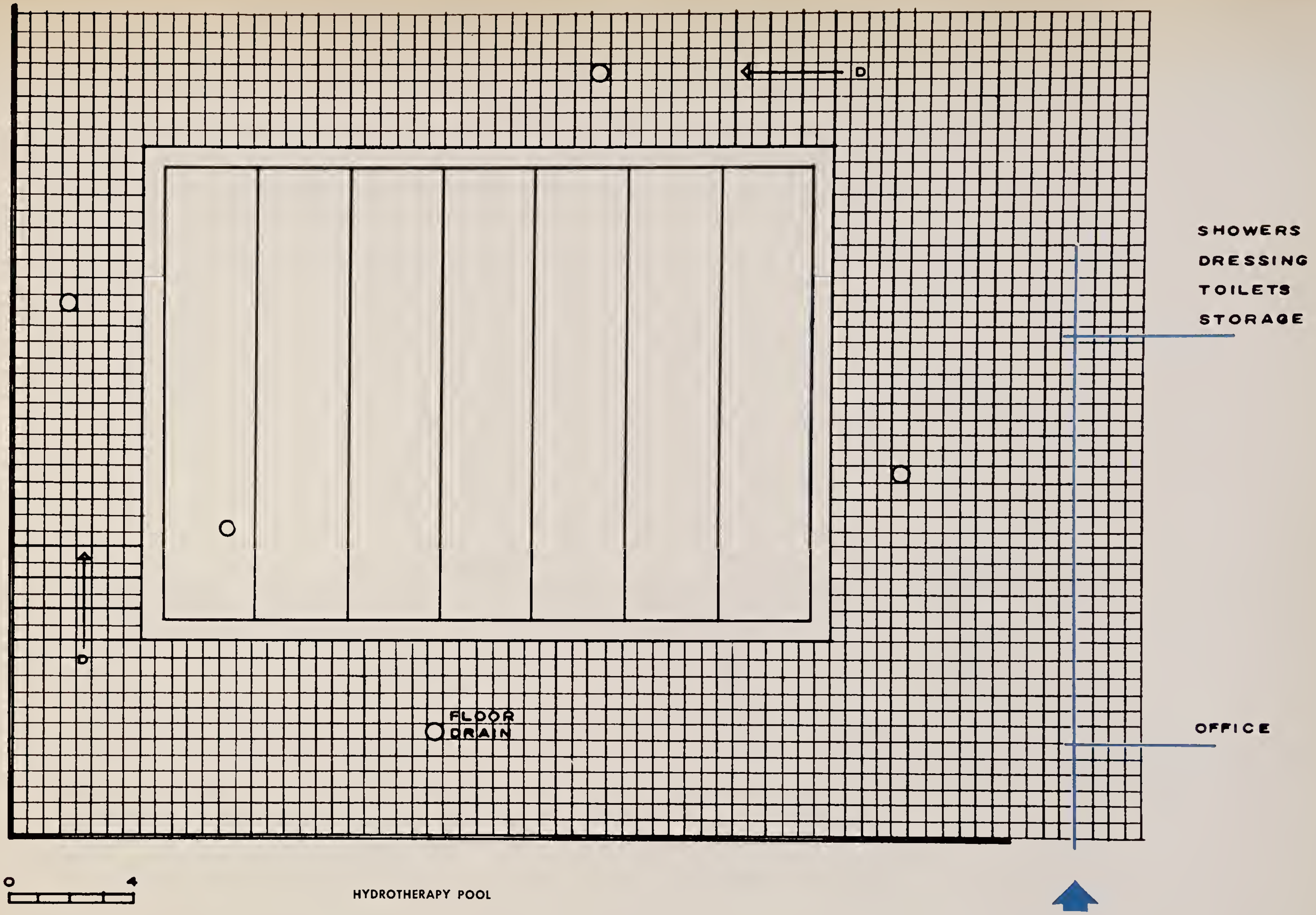
Do not install lights over the pool proper unless they can be relamped from above.

Although steps into the pool are sometimes provided, they are space consuming and infrequently used.

Lanes should be a minimum of 2′-6″ wide. (3′-0″ is recommended.)

The use of blue or green as a color for the pool proper is recommended.

Floor surfaces in and around the pool should be of non-slip tile, sloped to adequate drains in the floor. If the floor around the pool is on a grade, it should be heated.



HYDROTHERAPY POOL

3. OCCUPATIONAL THERAPY

Occupational therapy is administered under medical supervision and performed by graduates of schools of occupational therapy approved by the Council on Medical Education and Hospitals of the American Medical Association.

The objectives of occupational therapists are to assist in the mental and physical restoration of the disabled person, enabling him to adjust to his disability, increase his work capacity, and to want to become a productive member of his community.

In addition, the occupational therapist is concerned with the training of patients in the activities of daily living.

To achieve these goals, occupational therapy utilizes, on an individual basis, remedial activities which are found in creative skills and manual arts.

Location Within Building

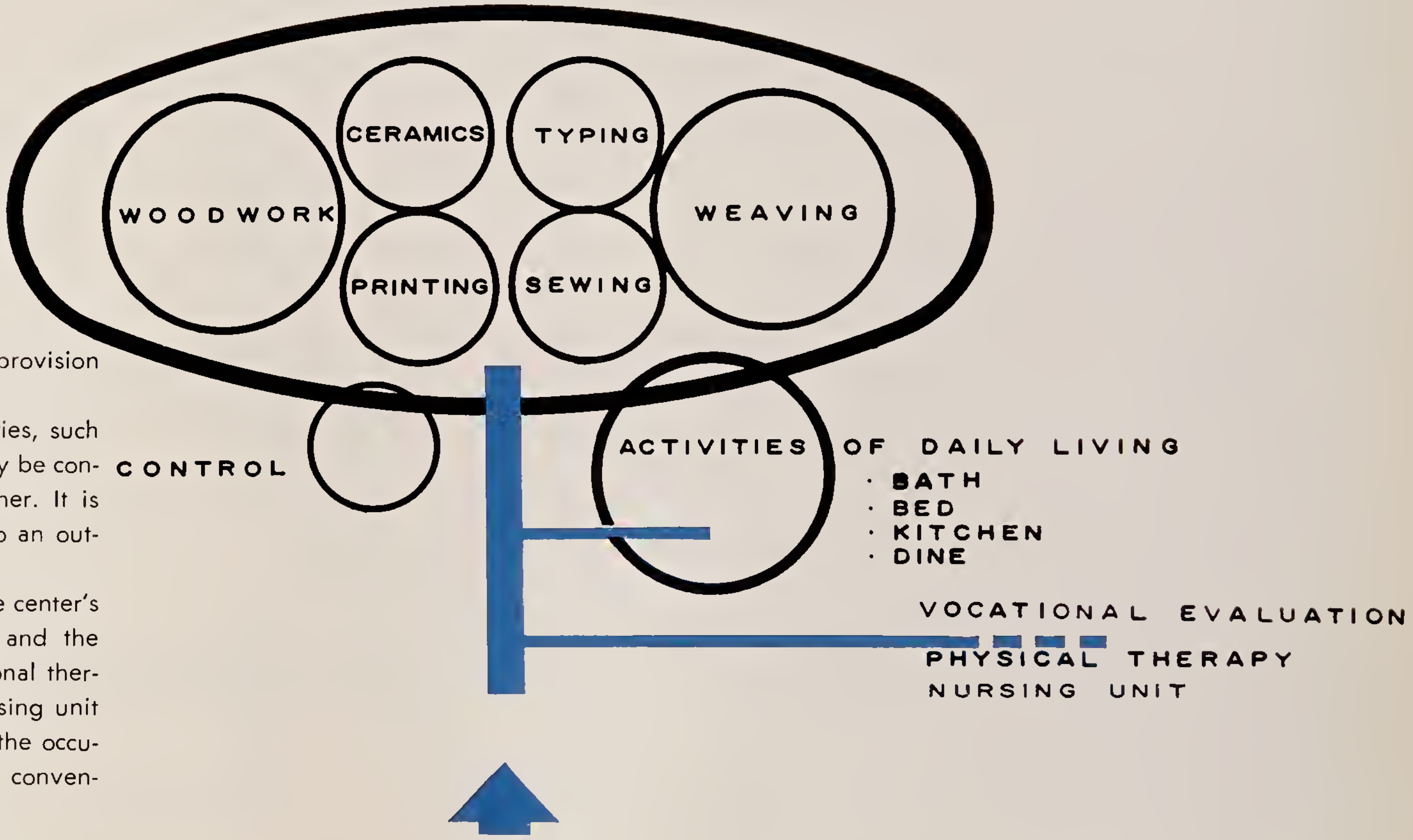
Occupational therapy should be adjacent to the physical therapy department, since many patients will use both areas.

Locate the area so that scheduled patients may proceed directly to occupational therapy without interfering with the circulation of other departments.

As some phases of occupational therapy involve noisy activity, this area should be removed from quiet zones in the building, or provision should be made for acoustic control.

Certain occupational therapy activities, such as those characteristic of daily living, may be conducted out of doors in favorable weather. It is recommended that, if possible, access to an outdoor area be provided.

The area should be accessible to the center's physician, the social adjustment area, and the vocational counseling area. As occupational therapy involves co-ordination with the nursing unit (for dressing and toileting particularly), the occupational therapy department should be conveniently related to it.



Staff-Patient Ratios

One occupational therapist can treat eight to fifteen patients per day. The number of patients depends upon types of disabilities and the severity of the cases.

Where highly individual treatments are required, the daily load will decrease. Also, if the therapist is relieved of administrative responsibilities and assisted by nonprofessional persons, the daily load will increase.

For orthopedic patients, special equipment must frequently be devised under close supervision of the occupational therapist.

There are many variables applicable to staff-patient ratios. A report on fifty-nine rehabilitation centers in twenty-three states by the United States Public Health Service* gives the following relationship between occupational therapists and volume of service.

		Measure of service—Median number		
Volume of service (visits per week)	**Centers reporting**	**Visits per week**	**Treatment hours per week**	**Number of therapists**
Less than 50	**15**	**32**	**40**	**1**
50- 99	**15**	**70**	**94**	**2**
100-299	**16**	**191**	**213**	**3**
300 or more	**7**	**718**	**848**	**10**

A visit is defined here as a single appearance of a patient for treatment in the department. A patient coming to an occupational therapy department one morning, for example, may undertake two specific activities. This constitutes two treatments, but only one visit.

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*Equipment Planning Branch and Program Evaluation and Reports Branch, Division of Hospitals and Medical Facilities, Public Health Service, Washington, D. C., ***Hospitals***, J.A.H.A., March 16, 1958.

Organization of Space

The same report lists characteristic occupational therapy and daily living activities in relation to volume of service.

Other activities may be added to the list. Also, activities should be selected that are characteristic of employment possibilities within the area served by the center.

The activity area may be so planned that each activity has a separate unit, or it may be planned to separate quiet from noisy and dusty from clean activity. The unit system facilitates assignment of special instructors to special activities and is also a more orderly arrangement of the space. However, this method increases the number of staff, makes supervision more difficult, and can be considered only in larger departments.

Movable work units and storage units are strongly recommended to obtain flexibility and to

	Need for activity, by volume of service (in visits per week)			
	Less than 50 visits	50-99 visits	100-299 visits	300 or more visits
	OCCUPATIONAL THERAPY			
Leather work Metal work Pottery Sewing Typing Weaving Woodworking and plastics	Basic	Basic	Basic	Basic
Fine arts Printing	Optional	Basic	Basic	Basic
Jewelry	Optional	Optional	Basic	Basic
Furniture repairing and refinishing	Not needed	Optional	Optional	Basic
Radio repair	Not needed	Optional	Optional	Optional
Photography	Not needed	Not needed	Not needed	Optional
	ACTIVITIES OF DAILY LIVING			
Bathroom Bedroom Kitchen Dressing Grooming Writing Eating Telephone	Basic	Basic	Basic	Basic
Living room	Optional	Optional	Optional	Basic

observe the first rule of efficient storage: store materials and tools at "the point of first use."

The activities of daily living (ADL) area, which is used to teach the patient how to live self-sufficiently in his home environment, should be closely related to the main occupational therapy treatment room.

As the occupational therapist works closely with the social adjustment staff and the vocational counselors, his office should be near their areas.

Before planning the area, it is advisable to consult with the chief occupational therapist, director, and physician of the center to determine which of the numerous activities are to be housed or emphasized in the department.

Selected Activities

Illustrated are a number of selected activities with the major pieces of equipment and suggested space arrangement for the particular activity.

Areas for these activities or other arts and skills may be arranged to form the nucleus of the occupational therapy department.

Allow space for wheel chair circulation and for the passage of patients with crutches between equipment.

Storage space can frequently be arranged so that maximum visual supervision is possible for the combined areas.

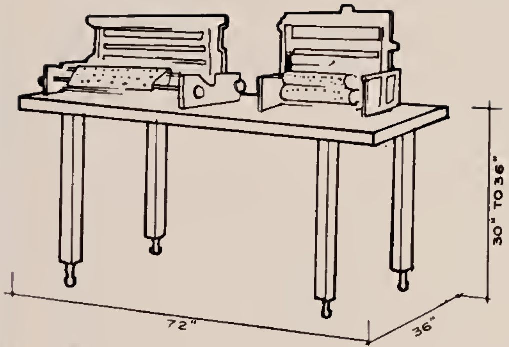
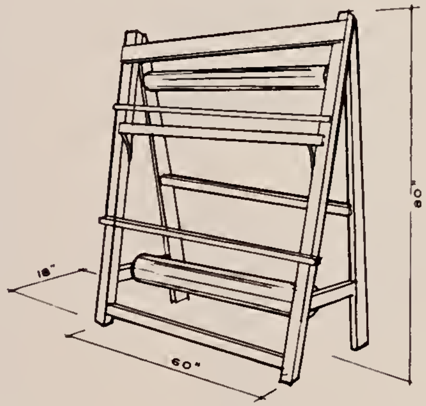


TABLE LOOMS

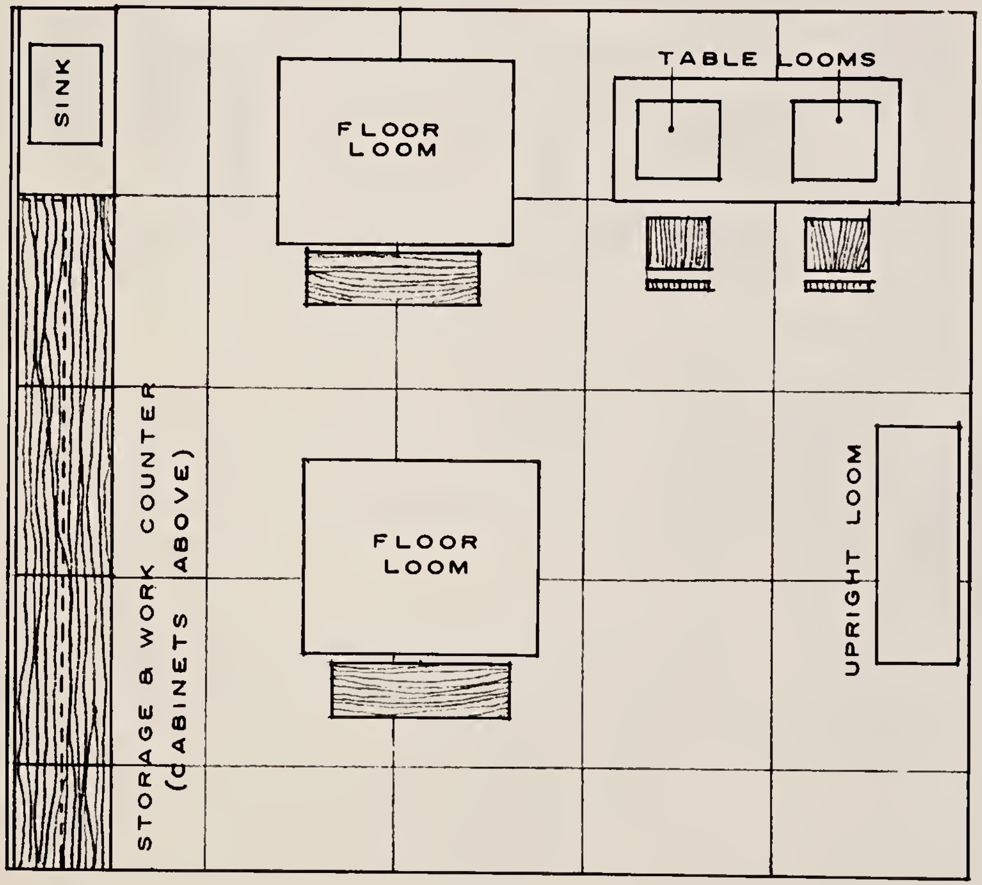


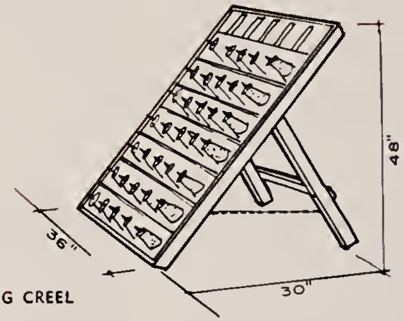
UPRIGHT LOOM

A. WEAVING

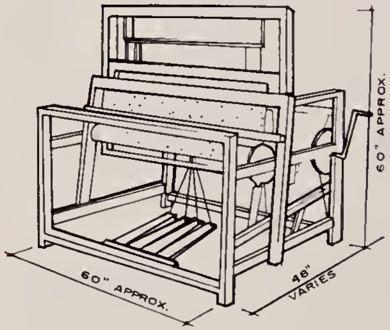
The major pieces of equipment are floor looms and table or hand looms. Warping creels and upright looms are somtimes included; quilting frames are seldom used.

The space show will accommodate a maximum of five patients.





WARPING CREEL



FLOOR LOOM

B. WOODWORKING

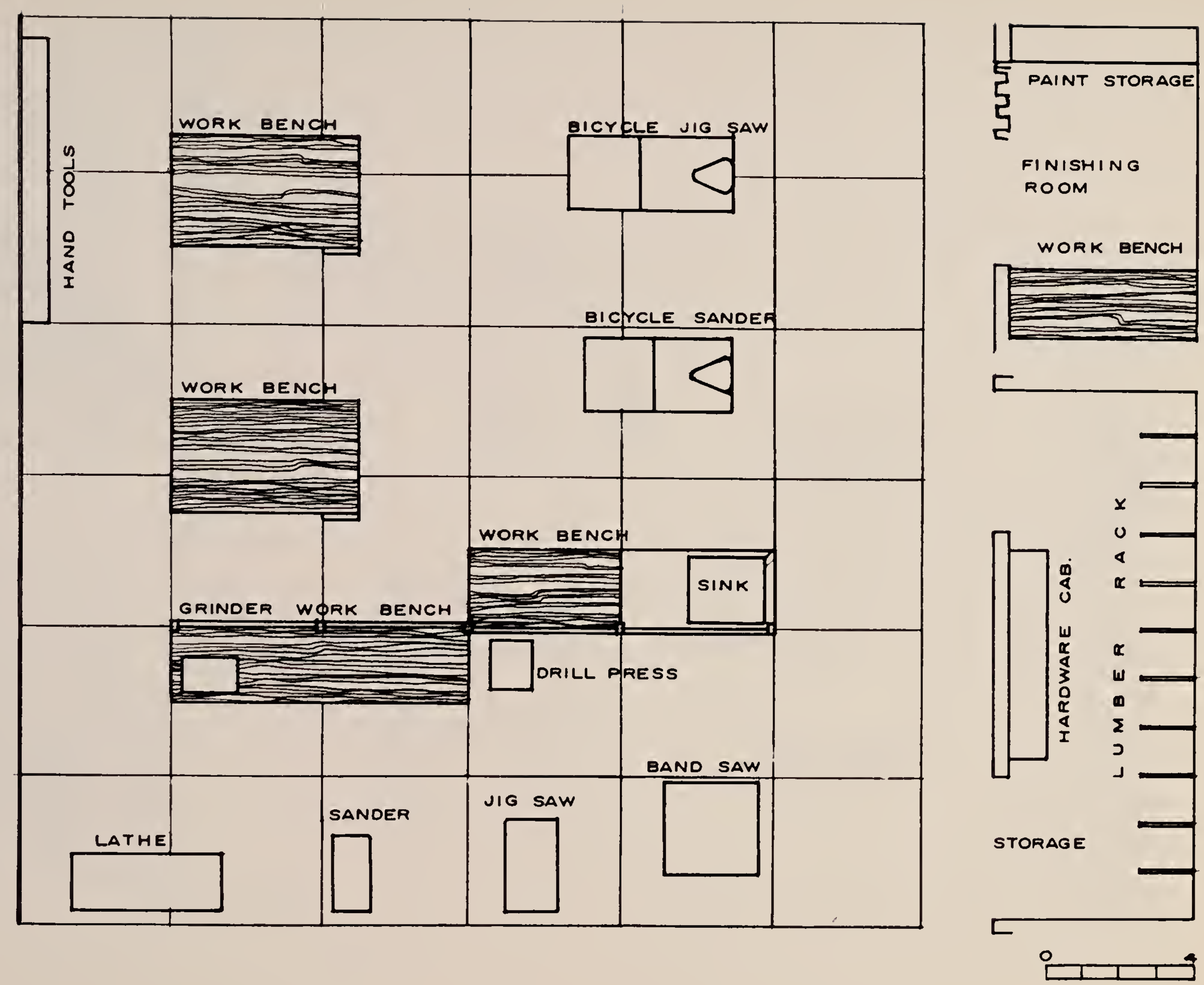
The major pieces of equipment are: work bench (adjustable in height), bicycle sander, bicycle jig saw, and power tools.

Power tools include grinder, drill press, lathe, sander, jig saw, and band saw. All machines should be controlled by a master switch under lock and key and by an easily accessible emergency master disconnect switch. All power machines should be grounded, and dangerous machines should be equipped with effective guards. Adequate first-aid equipment should be available.

Machines used in sequential order should be placed in the order of their operation. Arrange the machines to accommodate maximum sized material.

Lumber storage racks should be near the woodworking area, and, if possible, convenient to a delivery entrance.

A finishing room separate from, but adjoining the work area is desirable. Paint should be stored in metal cabinets. An exhaust system for fumes and gases



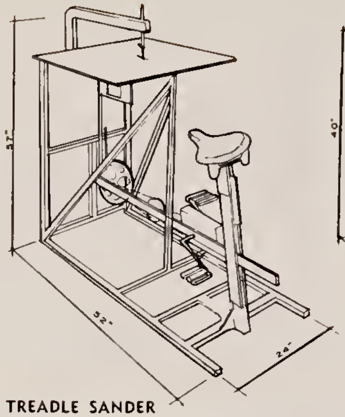
should be installed in the finishing room.

Provide a sink convenient to the area.

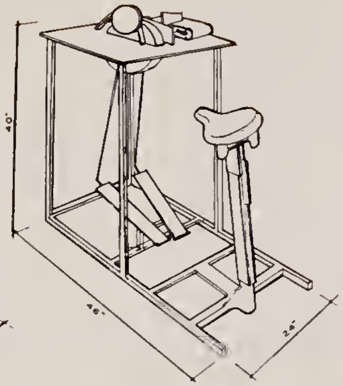
Separate the power tool area from the area in which hand tools are used, for the sake of easier supervision, safety, and in order to confine dust to a restricted area. Dust collectors should be attached to power tools if extensive use is anticipated.

Locate hand tools in readily accessible cabinets or racks.

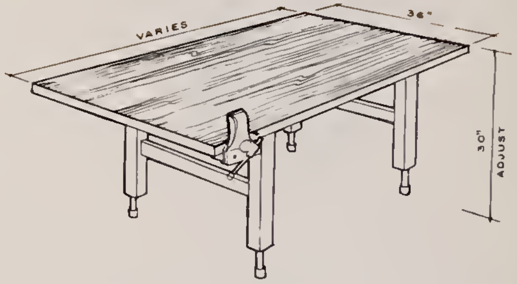
The space shown will accommodate approximately six patients.



TREADLE SANDER



BICYCLE JIG SAW

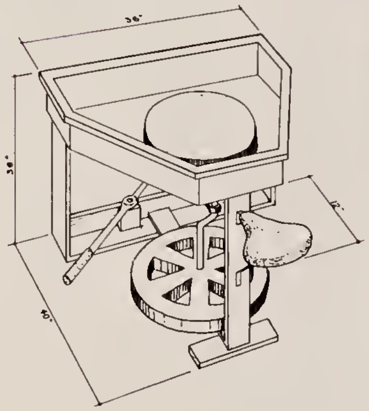


WORKBENCH

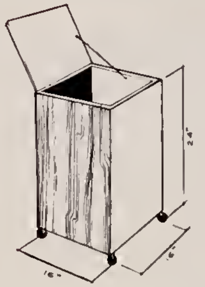
C. CERAMICS

Major pieces of equipment: work bench, kick wheel, kiln, damp box, sink with clay trap, and storage units.

The space shown will accommodate a maximum of two patients. Additional workbench area may be added to accommodate additional patients without increase in equipment.

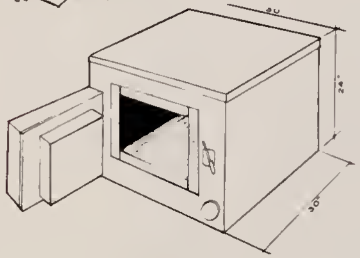


KICK WHEEL

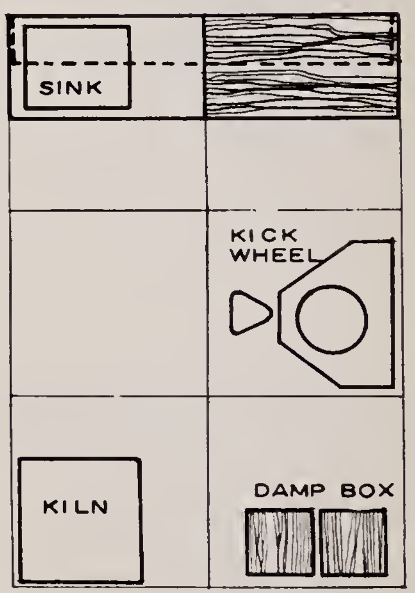


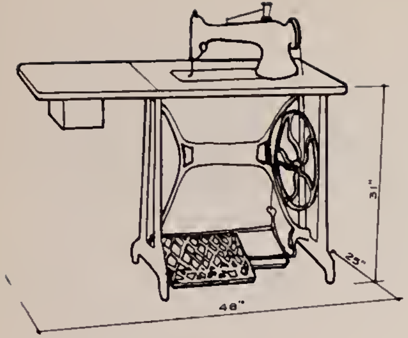
DAMP BOX

variable dimensions

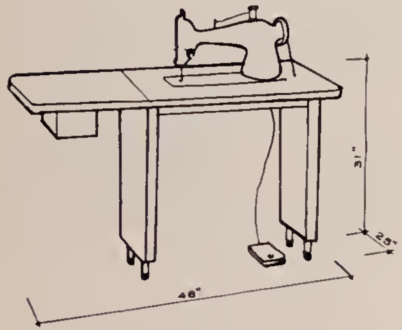


KILN variable dimensions

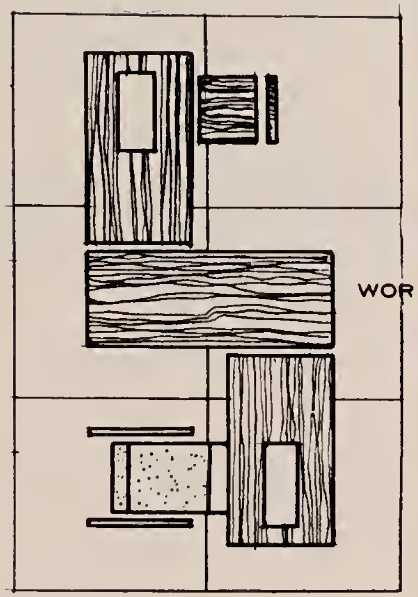




FOOTPOWER SEWING MACHINE



ELECTRIC SEWING MACHINE

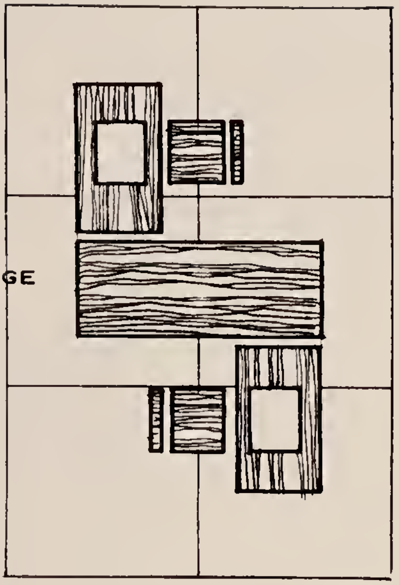


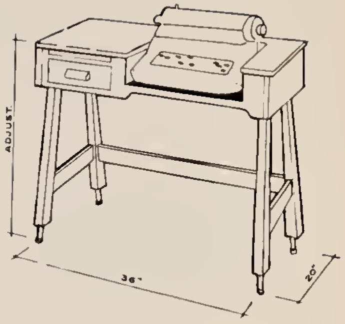
D. SEWING

Major pieces of equipment: electric sewing machine with a table of adjustable height, foot treadle sewing machine, cutting surface, and storage.

The space shown will accommodate two patients.

WORK & STORAGE



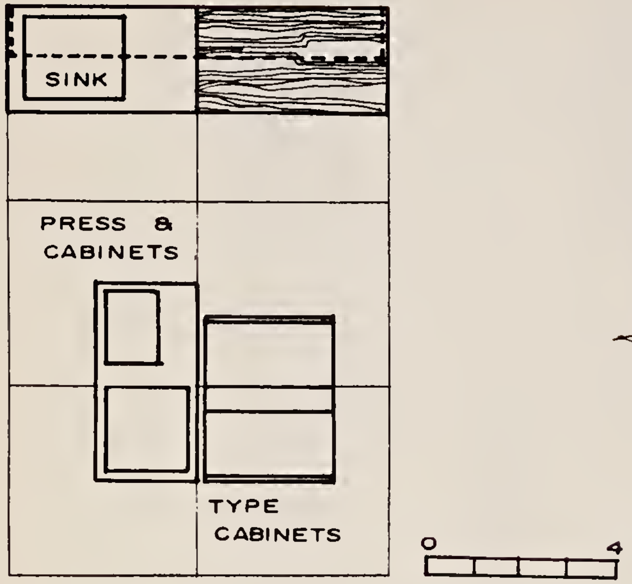


TYPEWRITER DESK

E. TYPING

Major pieces of equipment: electric typewriter on a sturdy desk of adjustable height, manual typewriter on adjustable desk or table, work surface, and material storage unit.

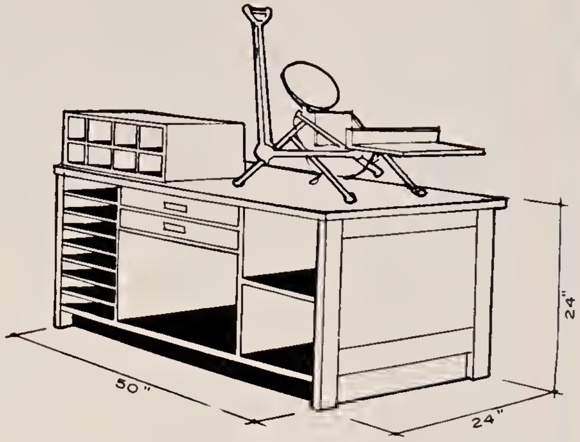
The space shown will accommodate two patients.



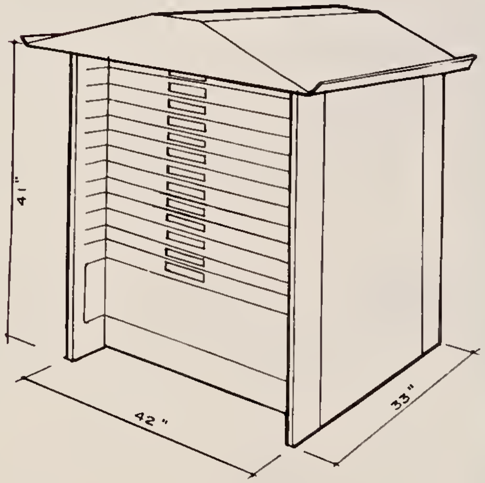
F. PRINTING

Major pieces of equipment: hand printing press, materials cabinet, type cabinet, workbench or table, sink, and storage unit.

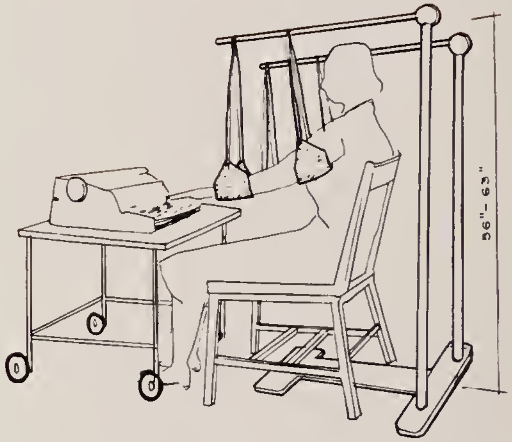
The space shown will accommodate two patients.



PRESS AND MATERIALS CABINET



TYPE CABINET



ARM SLING

G. GENERAL

Certain pieces of equipment, such as arm slings, are used by patients in a number of activities. Also, some equipment will have to be adapted to suit individual disabilities. Work surfaces which are adjustable in height are recommended for additional flexibility.

Therapist's Office

This includes staff office space for interviewing patients and attending to administrative duties.

There should be space for files and a desk with a dictating machine.

Staff lockers and dressing rooms (separate from patients) should be close to this department.

Partition the office so that interviews may have acoustical privacy.

Locate the office near the patients' entrance to the occupational therapy department and design it to provide maximum supervision of activities.

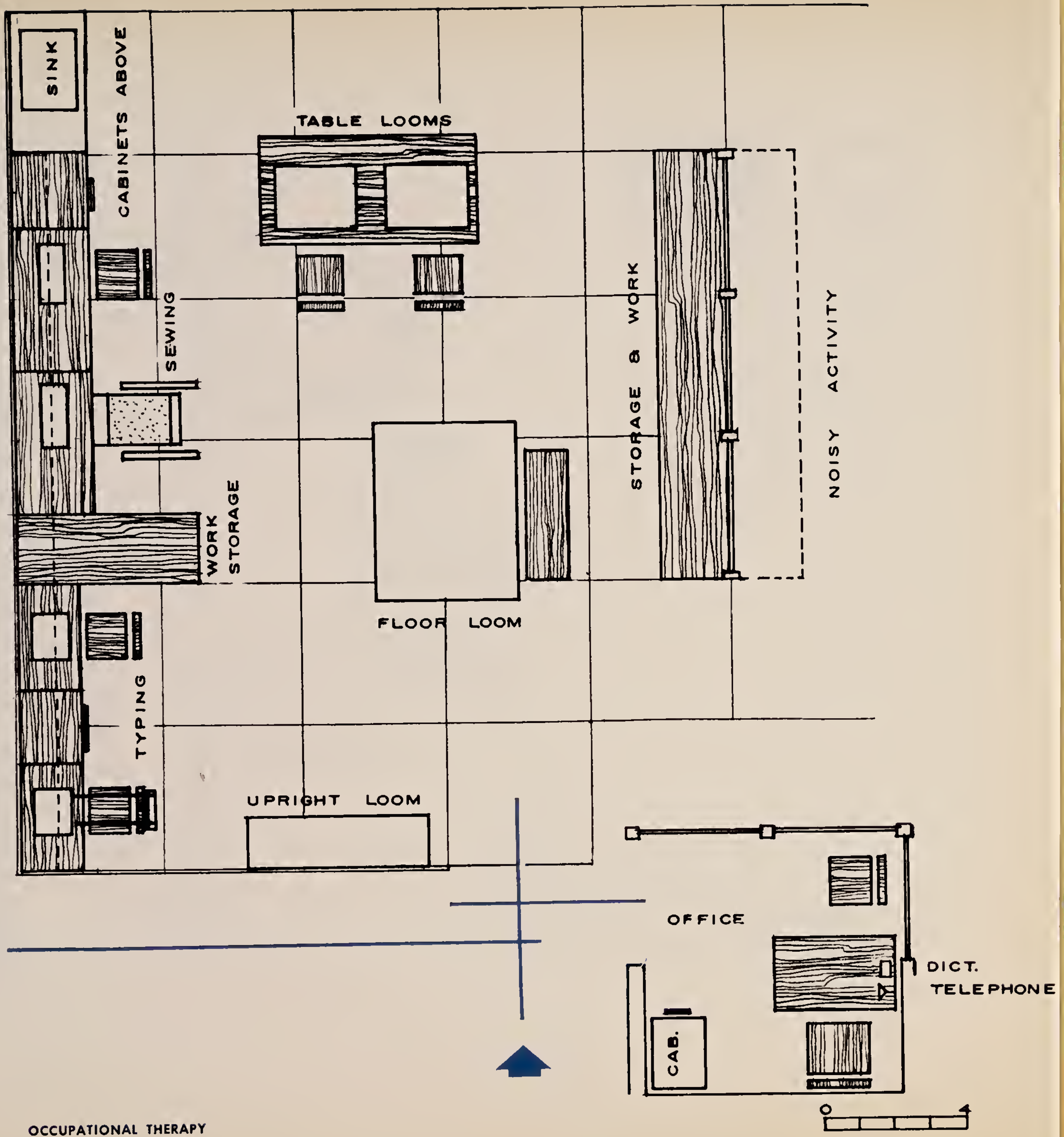
Occupational Therapy Treatment

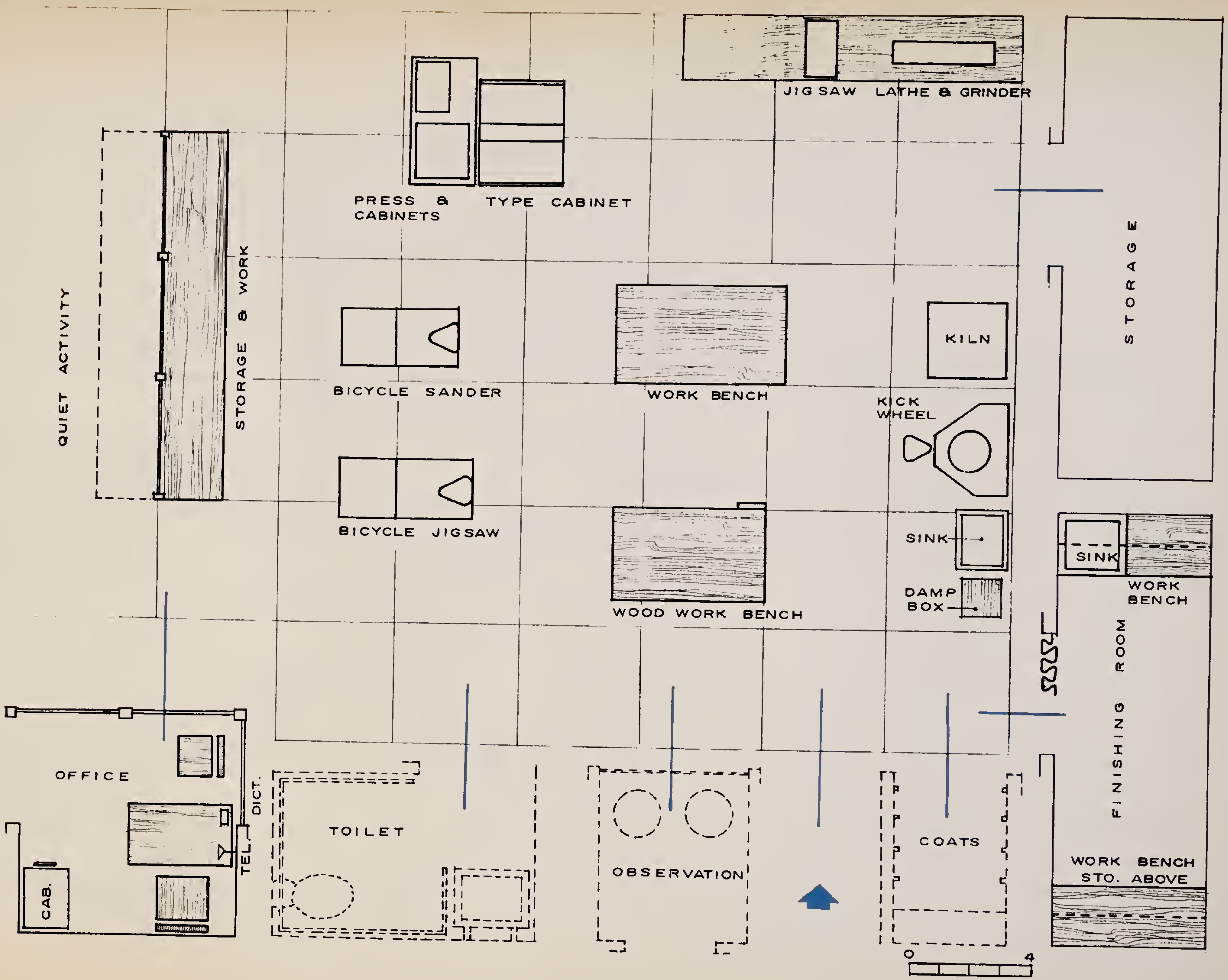
The layout indicated represents a sampling of the basic crafts and trades illustrated.

It shows 16 work stations; however, at no one time will all be occupied. For efficient operation, the staff should include an occupational therapist and a nonprofessional assistant.

Separation of noisy or dusty from clean or quiet activities is achieved by a glazed partition and movable storage units.

The therapist's office is situated for maximum visual control.




QUIET ACTIVITY
STORAGE & WORK
PRESS & CABINETS
TYPE CABINET
JIG SAW
LATHE & GRINDER
STORAGE
BICYCLE SANDER
WORK BENCH
KILN
KICK WHEEL
BICYCLE JIGSAW
SINK
WOOD WORK BENCH
DAMP BOX
SINK
WORK BENCH
FINISHING ROOM
OFFICE
DICT.
TEL.
CAB.
TOILET
OBSERVATION
COATS
WORK BENCH STO. ABOVE
0
4

Toilet facilities should be convenient for patients, and designed for users who are confined to wheel chairs. Provide coat storage space for patients. If it is not directly accessible from the treatment room, place it near the entrance to the department.

Provide storage units near each activity.

An observation cubicle will eliminate much interference of activities by visitors.

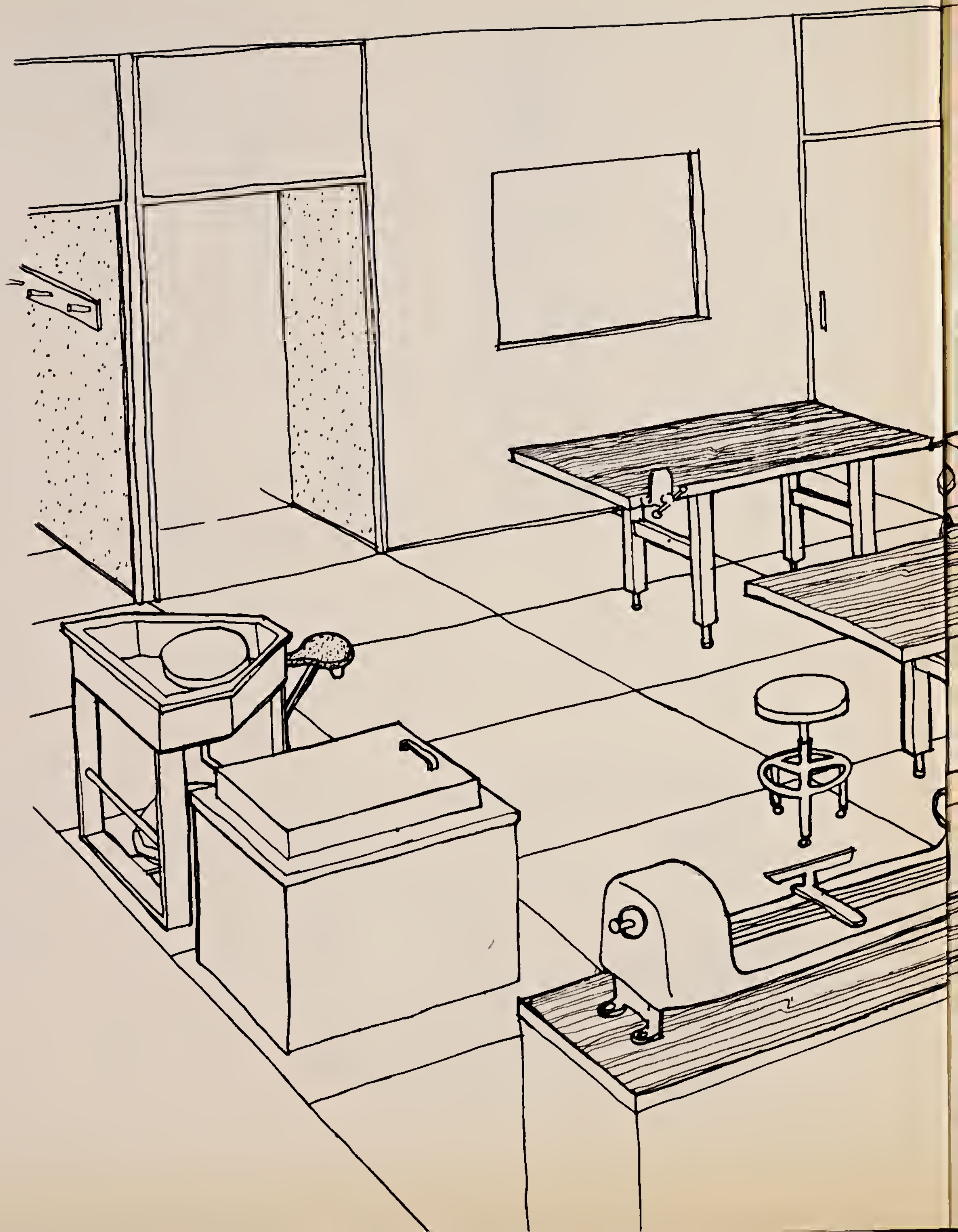
Doors to the area should be wide; double doors, each three feet wide, are recommended to handle equipment and supplies.

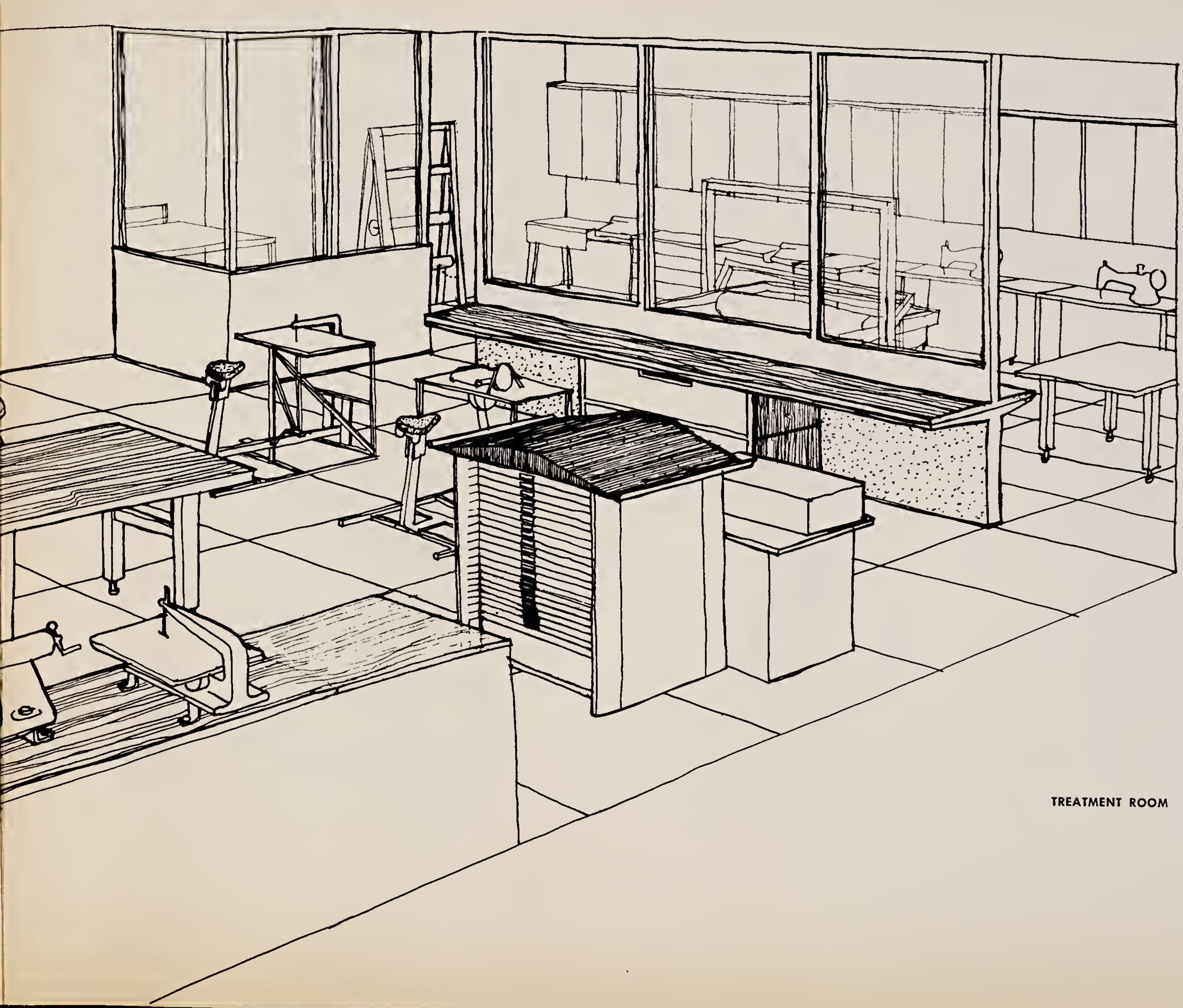
Sinks should be easily available to therapists and patients.

Air conditioning of this area, with separate exhaust system from the finishing room, is highly desirable.

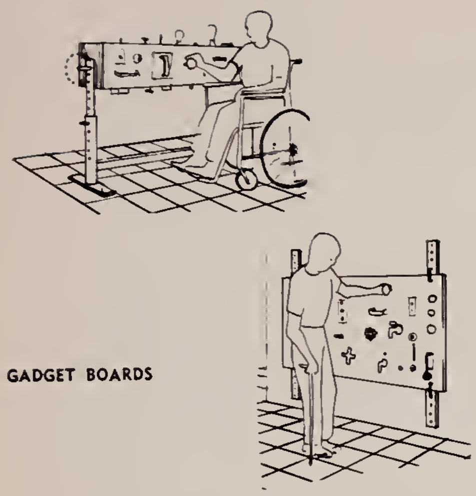
Natural lighting from a northern exposure is most desirable, with an eastern exposure a second choice.

Locate the exercise area near activities of the daily living area. ADL may form a part of the treatment room, in which case it should be near the entrance to the treatment room.

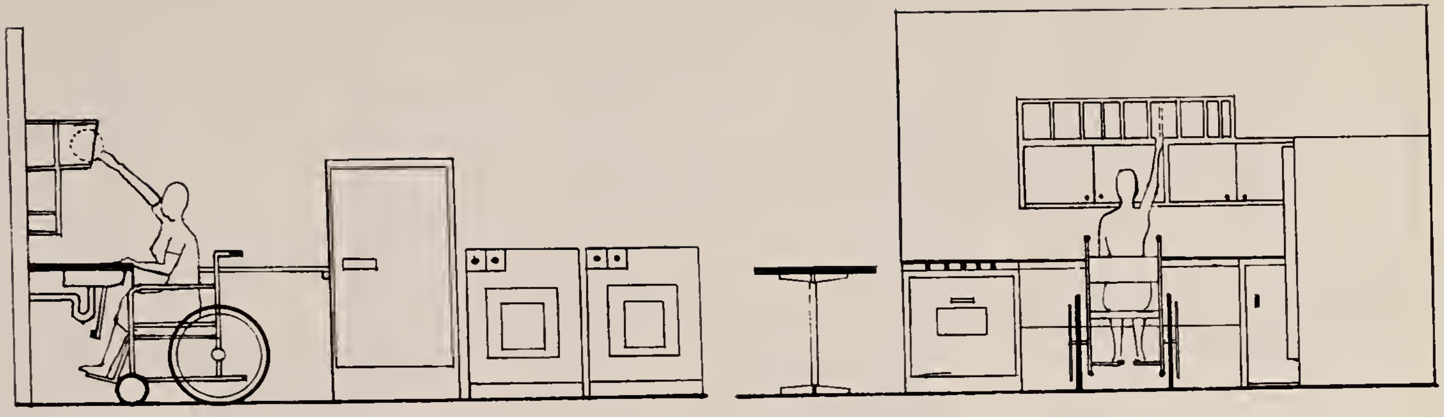




TREATMENT ROOM



GADGET BOARDS



ACTIVITIES OF DAILY LIVING

Activities of Daily Living

The activities which are indicated include most situations found in the home.

Some training, particularly bathroom and bedroom activities, will require co-operation with physical therapists. Consequently, the ADL area should be easily accessible from the physical therapy department.

A gadget board containing numerous items of hardware, light switches, faucets, and other items frequently used should be included. The board should be adjustable in height.

The bathroom should be arranged to accommodate wheel chair patients (see "In-Patients").

The kitchen plan may include, in addition to the type illustrated for wheel chair use, standard counter and cabinet arrangements to test the patient's ability to cope with "normal" situations. Counters of adjustable height may be used to advantage in training patients.

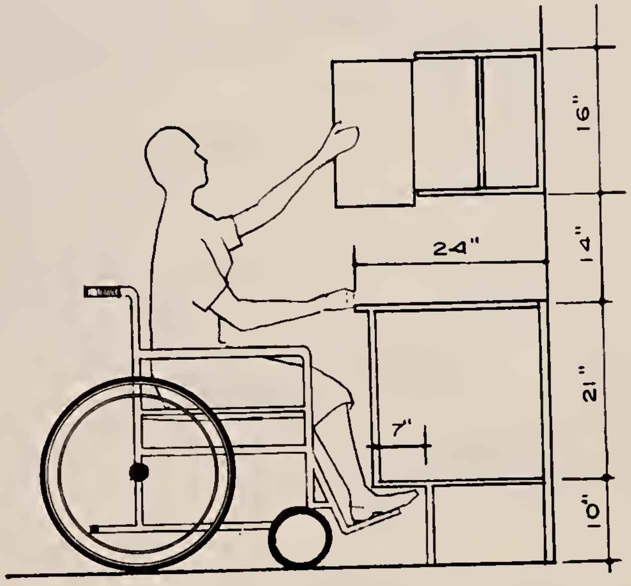
A front loading washer and dryer, as illustrated, is desirable for wheel chair patients. Controls at the front of the range are recommended. However, the purpose of this training is to show the patient how he may use, if possible, appliances that are standard in his community.

A standard clothes closet is recommended as a part of the training in dressing.

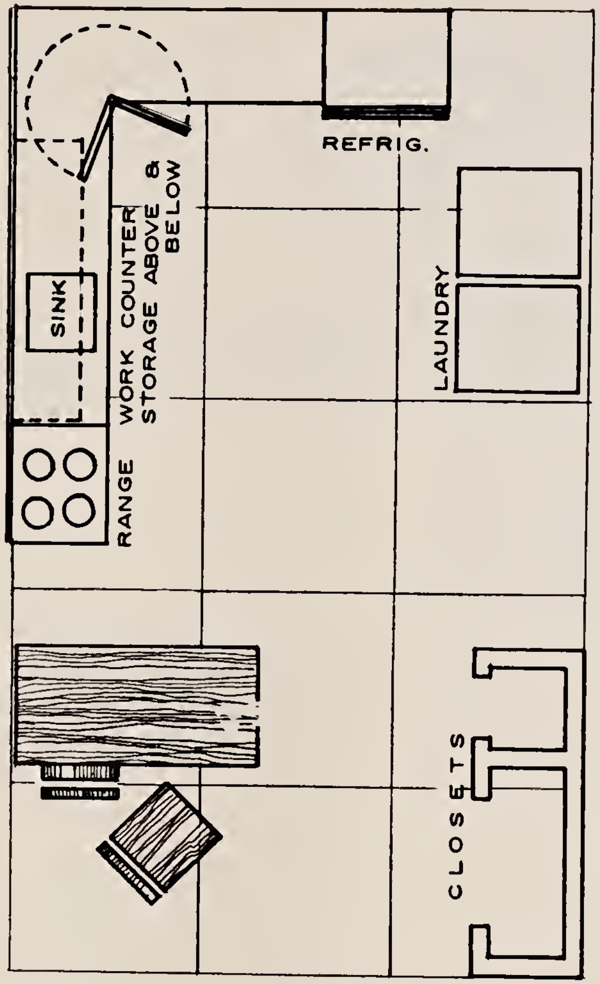
A broom closet, vacuum cleaner, and adjustable ironing board should also be included.

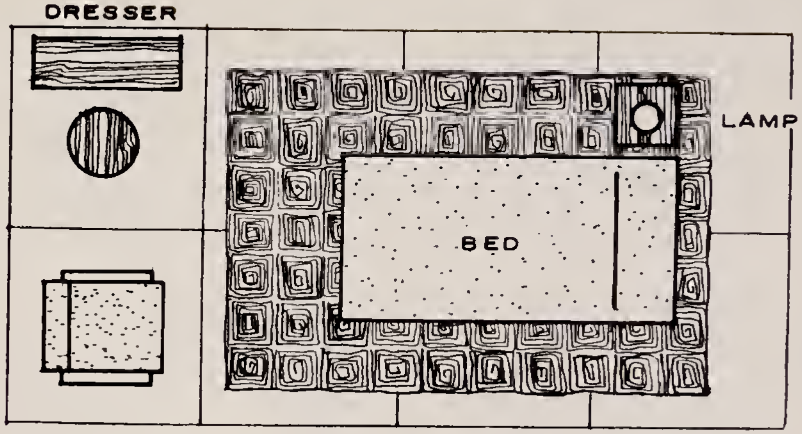
Table space should be provided for training in eating and for use as a writing surface.

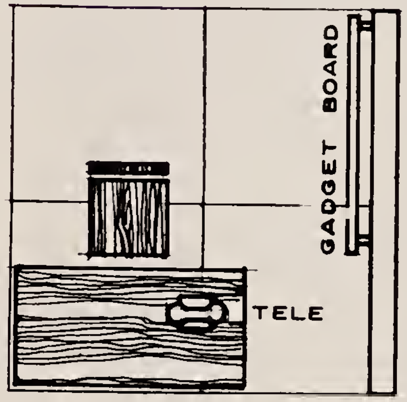
A rug can also be used to test the patient's ability to cope with that type of floor covering.

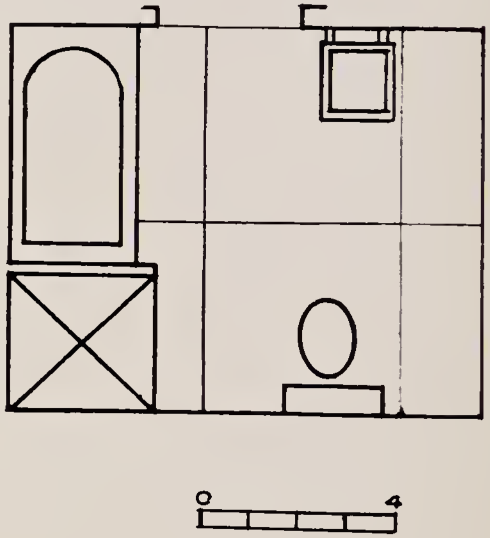


OUTDOOR THERAPY









ACTIVITIES OF DAILY LIVING

4. SPEECH AND HEARING

The speech and hearing unit serves those with disabilities of deafness, stuttering, or delayed speech and voice disorders which may result from various basic abnormalities, diseases, or injuries.

A wide variety of programs is possible. Some provide for treatment of post-operative disorders resulting from tonsillectomies and ear operations, cerebral palsy, meningitis, cleft palate, hemiplegia, vocal cord anomalies.

Services may range from testing and treating of all conditions to emphasis on disorders associated with certain specific disabilities.

The center may include speech therapy only or audiological testing as well.

The program may serve adults or children, or both.

The center may include a teaching and research program in speech and hearing.

Location Within Building

Speech and hearing facilities are generally classified under the medical division of the rehabilitation center, but are frequently housed near the psychological and social units, since the patient may require their services. This unit should be protected against extraneous noise, since the patient should not be disturbed during tests or treatments.

Surround this unit by other quiet rooms and isolate it from elevators, stairways, toilet rooms, work shops, and other major sources of noise.

If the program serves children's hearing and speech disorders only, locate it in the children's treatment and training unit.

Staff-Patient Ratios

Although ratios vary widely with different patients, an approximation of staff-patient ratios is as follows:

a. For audiometric screening: one audiometric technician may screen one patient every five to eight minutes.

b. For audiometric testing: the audiologist may test four to eight patients per day during the initial screening process. For a complete test for hearing aid evaluation, three hours is needed per patient, and the test is usually conducted in two visits.

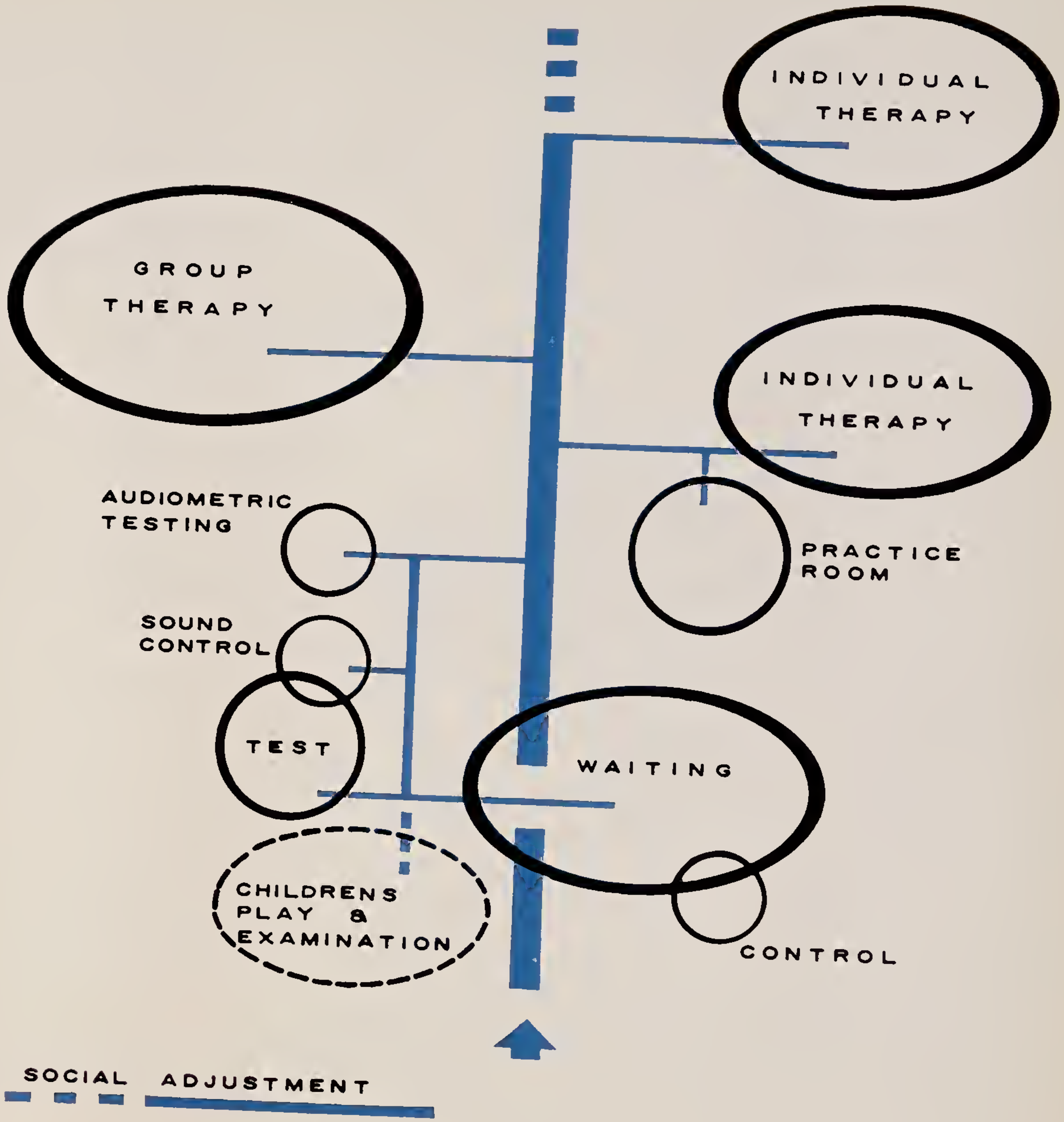
c. For individual therapy: one therapist for six to ten patients per day (½-hour to one-hour periods). The audiologist may also act as therapist.

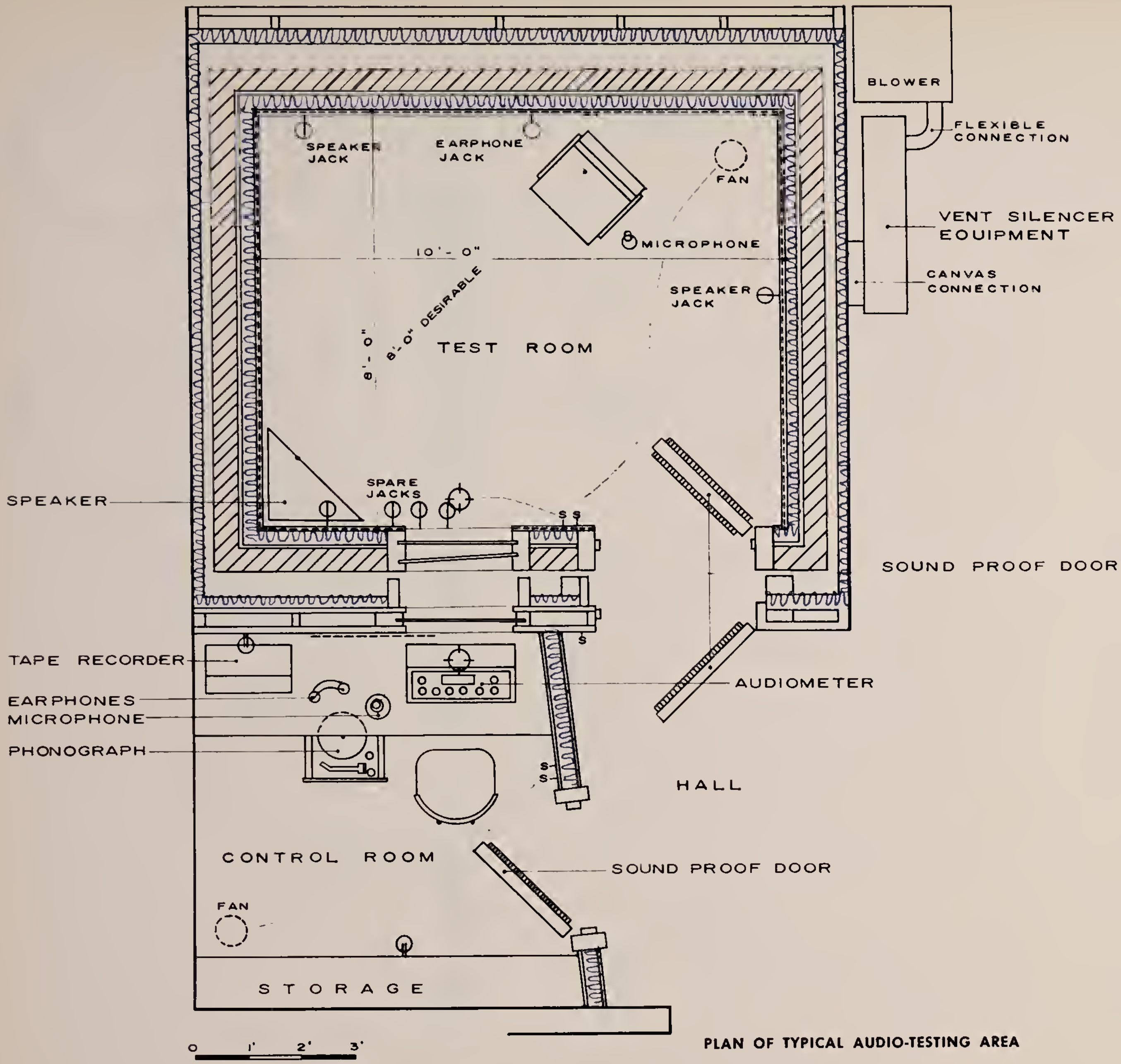
d. For group therapy: five to eight persons per therapist; one therapist for 24 patients per day.

Organization of Space

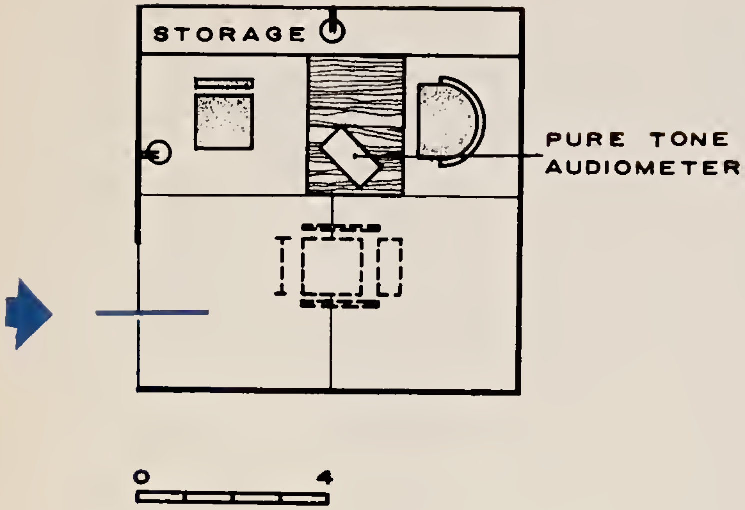
If the program is of sufficient scope, provide a separate waiting room with good access to the speech and hearing department. Provide space for a receptionist who may also act as the department director's secretary and control all telephone calls.

Patients' toilet facilities and coat racks should be accessible from the waiting room. It is recommended that the sound control room, test room, and audiometric testing rooms be located on a sub-corridor off the waiting room in order to reduce noise. In a children's program, a play and examination room near the test room is recommended.





PLAN OF TYPICAL AUDIO-TESTING AREA



Audiometric Testing

The audiometric testing room (or, in some cases, booths) is a facility for pure-tone threshold testing and short form hearing screening tests.

Space should be provided for the audiologist's desk with an audiometer and one patient's chair or wheel chair. Furniture should be arranged so that the audiologist may face the patient and operate the audiometer. Provide storage and shelving.

The room should be treated acoustically for an over-all residual noise level of not more than 40 decibels as measured on the "C" scale. This involves the treatment of walls, ceilings, and floors.

Control Room and Test Room

This facility is essential for an audiology program.

It is preferable to place these rooms off the sub-corridor or hall, and to control the activity in surrounding rooms in order that extraneous noises be eliminated.

For a children's program it is highly desirable that, outside the test room, a play and examination room be provided to accustom the child to his environment and to make the transition to the test room as easy as possible. This room should be equipped with children's furniture and toys.

Equipment for the control room will include a work surface for the audiometer, earphones and microphone, tape recorder, and tape and record storage, and may include other equipment such as a Bekesy audiometer.

If hearing aid evaluation is part of the program, provide storage space for hearing aids either in the test room or the control room.

The control room should be treated acoustically to achieve an over-all residual noise level of not more than 40 decibels on the "C" scale.

An observation window approximately 18" by 20" is required. For adequate control of sound transmission, three pieces of glass of different thicknesses and nonparallel in construction are recommended. One-way vision glass in the control room is optional.

Equipment for the test room includes a speaker, microphone, and headphone. Microphone and headphone jacks should be located near the patient's chair. Additional auxiliary wall or ceiling-mounted speakers are sometimes provided, particularly for the testing of children. These speakers should be separately switched. All this equipment is wired to the audiometer. Additional spare jacks in both the control and the test room are recommended for other items of equipment. Conduits between the jacks should be installed in a manner that avoids sound transmission.

For complete diagnostic service, a galvanic skin response audiometer may be used in the test room. For diagnostic testing, delayed auditory feedback equipment may be used. For a children's program, children's furniture and toys should be part of the test room equipment.

The test rooms should be acoustically treated to achieve an over-all residual noise level of not more than 30 decibels on the "C" scale. This requires carefully supervised construction of a "floating room." In new construction the subfloor may be depressed to eliminate the high step or ramp at the entrance to the test room. If built on grade, the floating slab for the room may be placed on a sand bed.

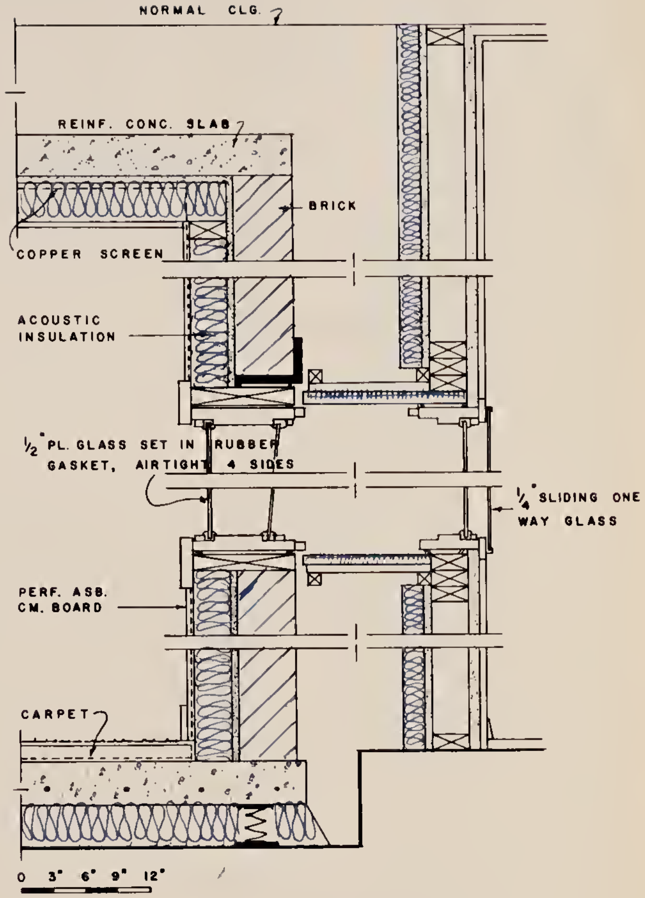
To achieve this degree of acoustic control, it is essential that the floating room have adequate "mass" and that all necessary precautions are taken to avoid the conduction of sound.

Proper air circulation is a frequent problem.

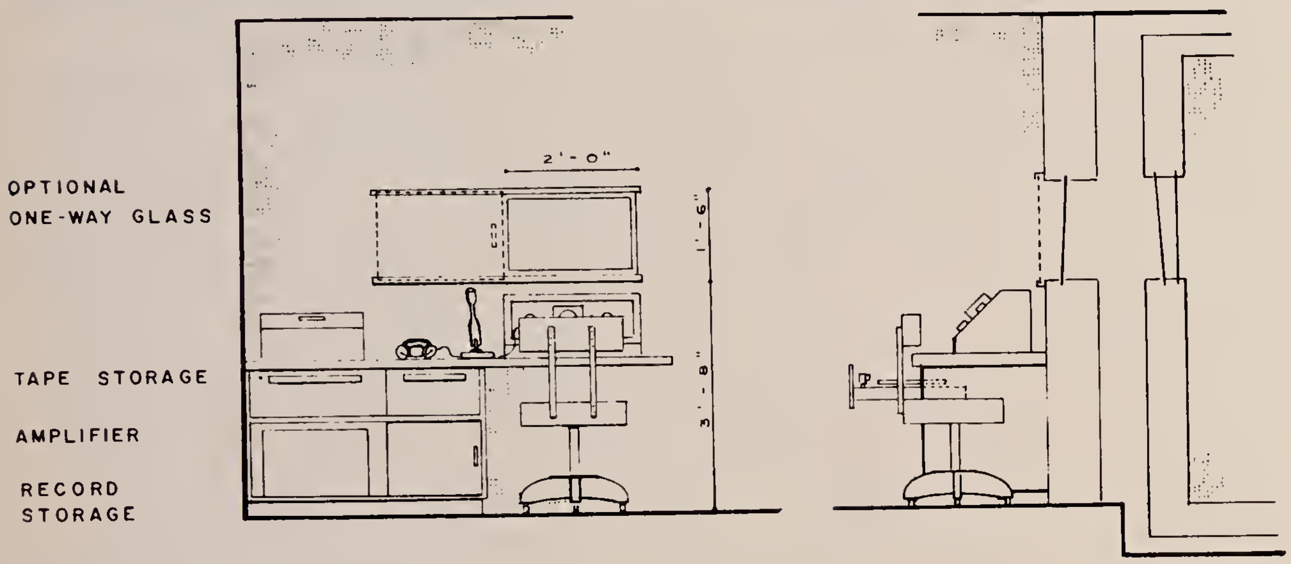
Although fans in the rooms are sometimes employed, they are never satisfactory and can be used only when tests are **not** being conducted. An exhaust system with a suction fan at a remote point is preferable, but this is effective only when doors to the rooms are open.

Blowers with silencing equipment outside the rooms provide a preferred method of circulating air without noise interference. Air conditioning is best if it can be an integral part of the total system, installed carefully so that it will not create noise interference.

Although fluorescent lights will reduce heat within the rooms, they frequently produce noise. If they are used, the ballast should be mounted outside the room. Silent switches should be used.



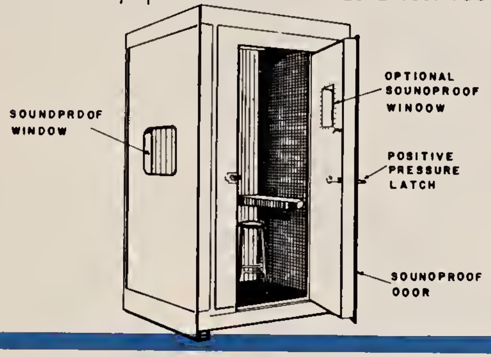
· WALL · & · VIEWING · WINDOW · SECTION ·

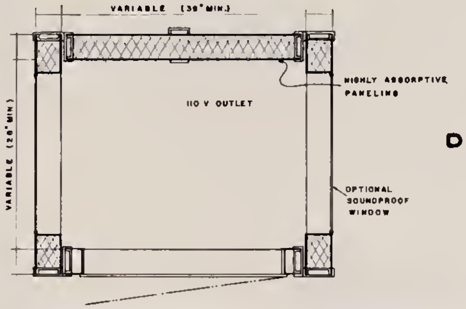


ELEV. CONTROL-COUNTER- SECTION

Prefabricated Soundproof Rooms

Prefabricated soundproof rooms, either custom built or of standard dimensions, are available. Such equipment is usable as a test room if related controlled space is provided. A double unit for the test room and control room is a possible arrangement. Prefabricated rooms are convenient if contemplated expansion makes room relocation a likelihood.





Individual Therapy Room for Adults

After medical evaluation, psychological appraisal, a social interview, and audiometric screening and testing, a program of audiology services is developed for the patient.

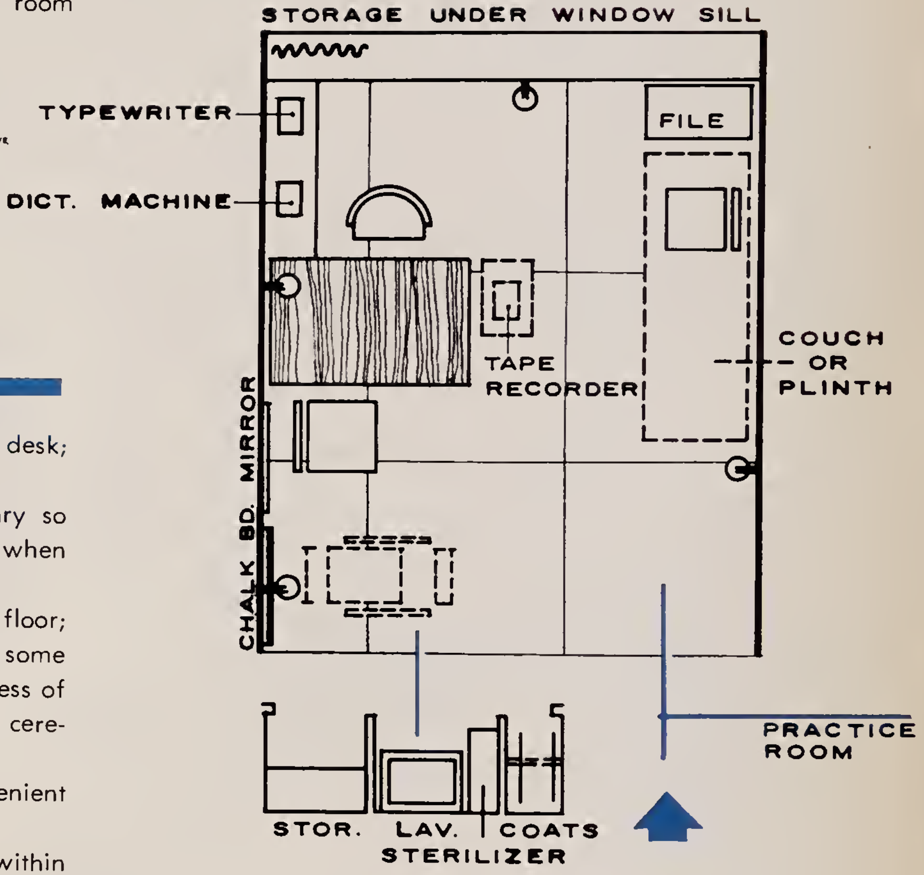
The program may include hearing aid selection (performed in the sound control room, except for follow-up), speech reading and auditory training (frequently done in groups), and speech conservation and correction.

The therapy room may also be used as a therapist's office.

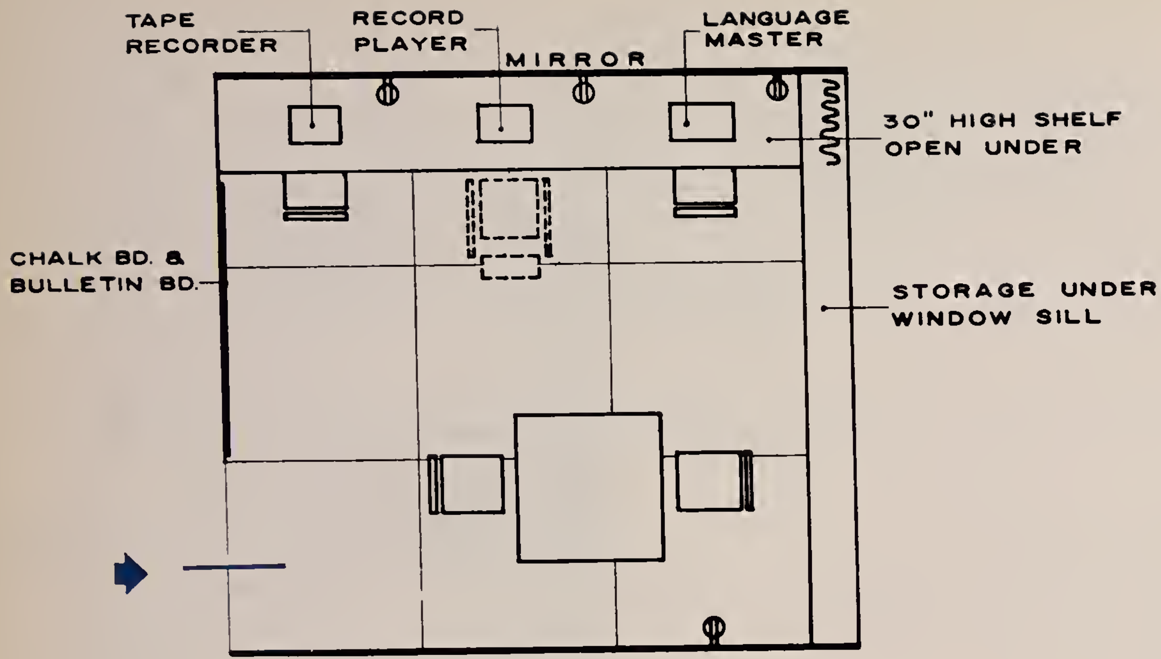
Special equipment for the room includes:

- i) tape recorder on table on wheels;
- ii) typewriter convenient to therapist (preferably not on desk);
- iii) dictation machine near therapist's desk;
- iv) file cabinet and storage;
- v) telephone—controlled by secretary so that therapist is not interrupted when with patient;
- vi) mirror and chalk board 30" above floor;
- vii) a couch or plinth (for relaxing for some types of patients and during process of making ear moulds, or for older cerebral palsy patients);
- viii) a lavatory within room or convenient for therapist;
- ix) a sterilizer for oral equipment within room or convenient for therapist.

Other considerations include good natural light and ventilation, and space for wheel chair, books, and equipment storage.



INDIVIDUAL SPEECH THERAPY - ADULTS



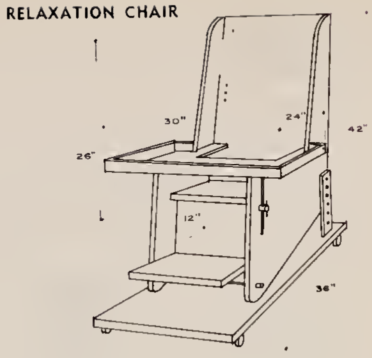
Practice Room

For adult programs dealing with aphasia, esophogeal speech and some other types of speech problems, a practice room is frequently desirable for supervised practice periods in which the therapist gets the patient started and checks on him periodically. This procedure frees the therapist for individual therapy treatment.

Preferably, the room should adjoin the adult individual therapy room(s).

The room may also be used for auditory training.

Equip the room with tape recorder, language master, and a record player; and furnish it with a mirror, chalk board, and games table.

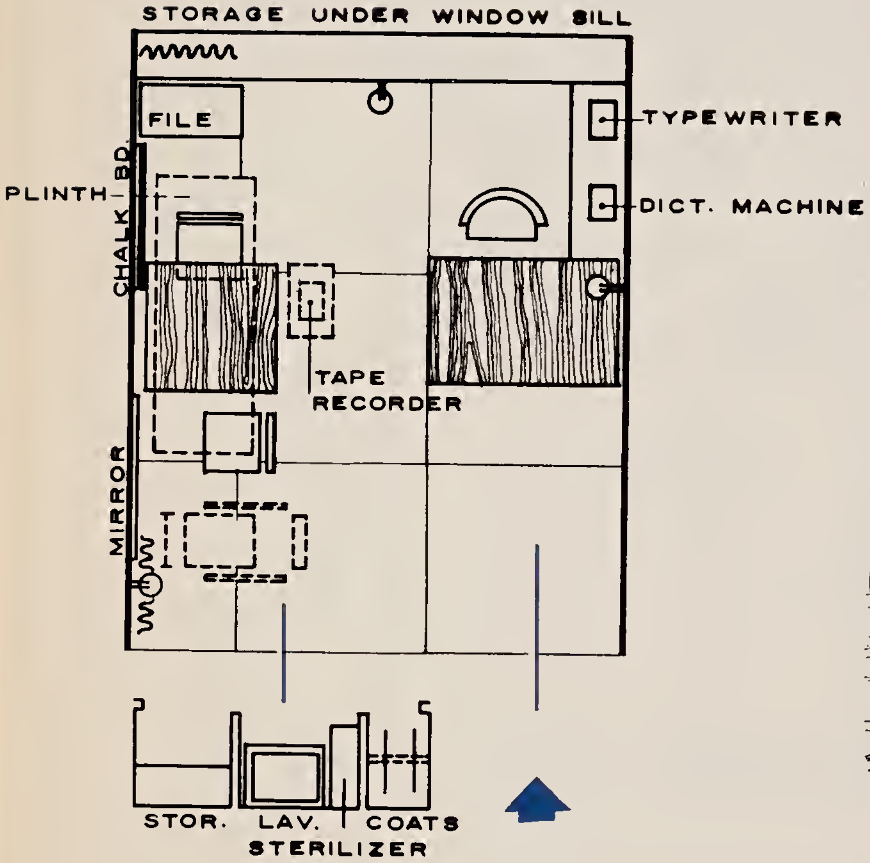

RELAXATION CHAIR

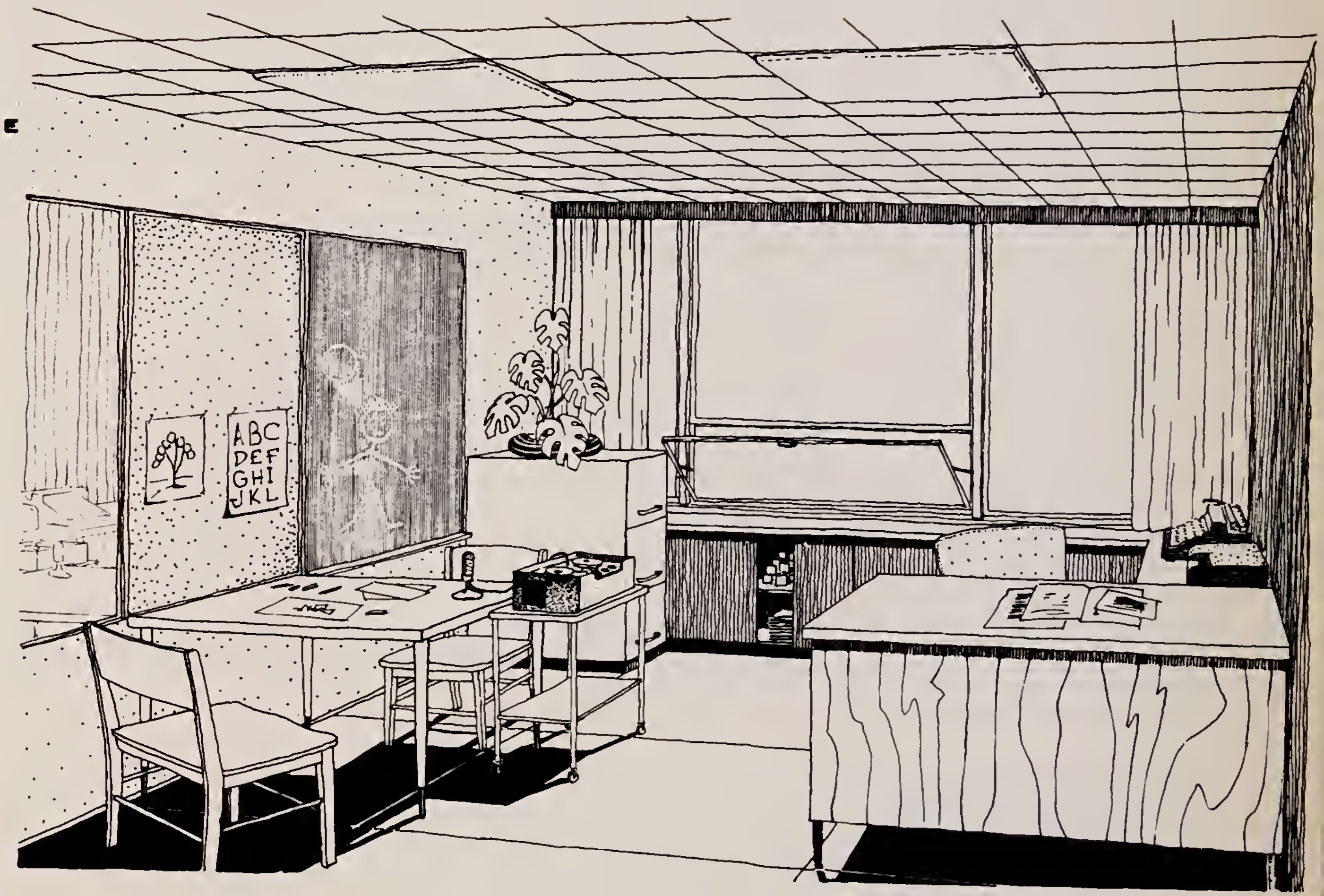
Individual Therapy Room for Children

Space requirements similar to those for adult therapy apply to the children's therapy room.

Equipment should include a table of child's height and children's chairs. A wall mirror about 24" above the floor and 48" long should be so placed that the child and therapist may sit directly in front of it. Provision should be made to cover the mirror with a curtain, sliding tack board, or other device, so that it will not be distracting when not in use. For cerebral palsy patients and others, a plinth will be required in addition to a child's table. In this case, a mirror is sometimes placed on the ceiling over the plinth. Relaxation chairs are also used in speech therapy for children with cerebral palsy.

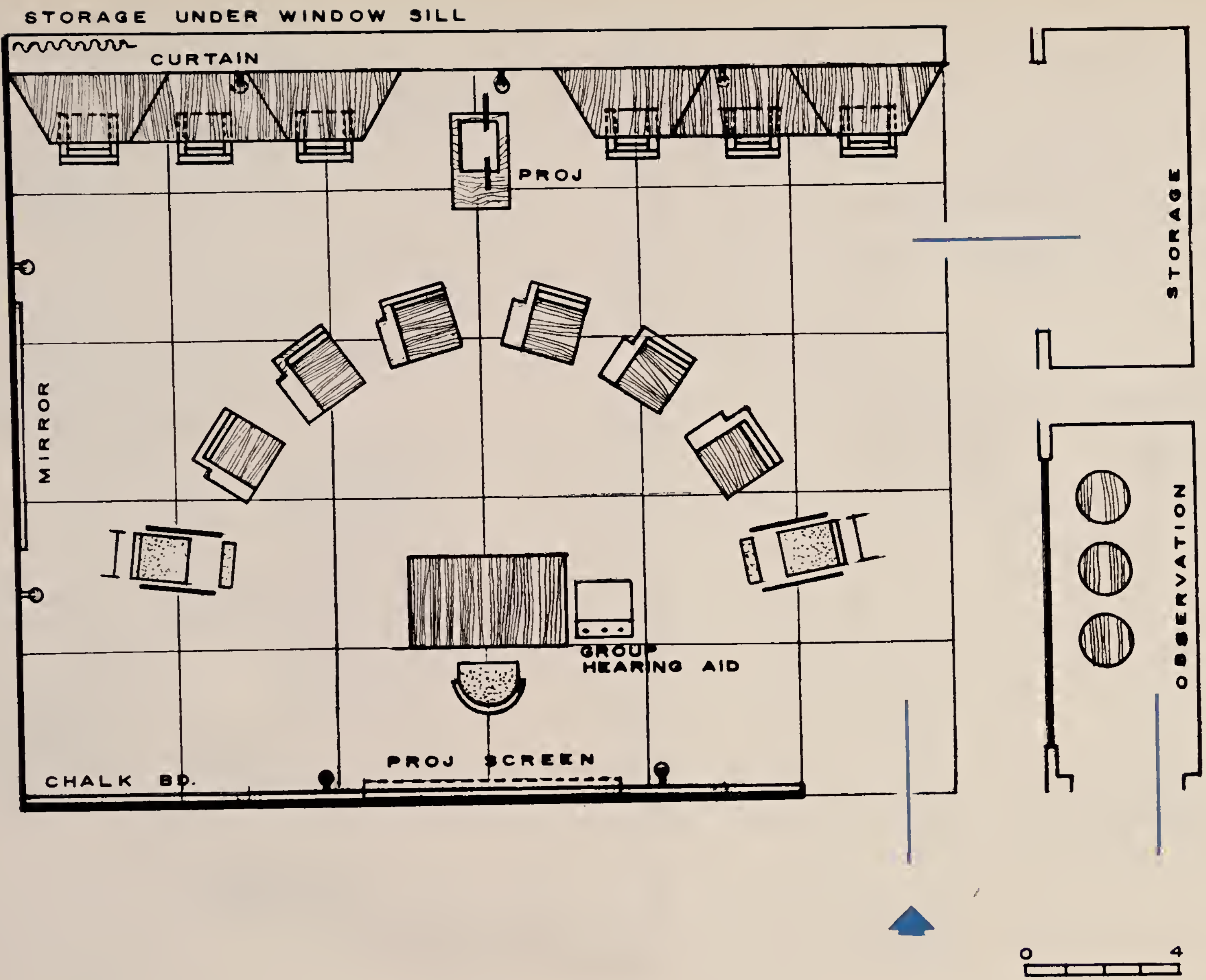
For the larger speech and hearing programs a series of individual therapy rooms should be provided, and furnished with equipment to suit various situations. In this way the shifting of furniture will be minimized.





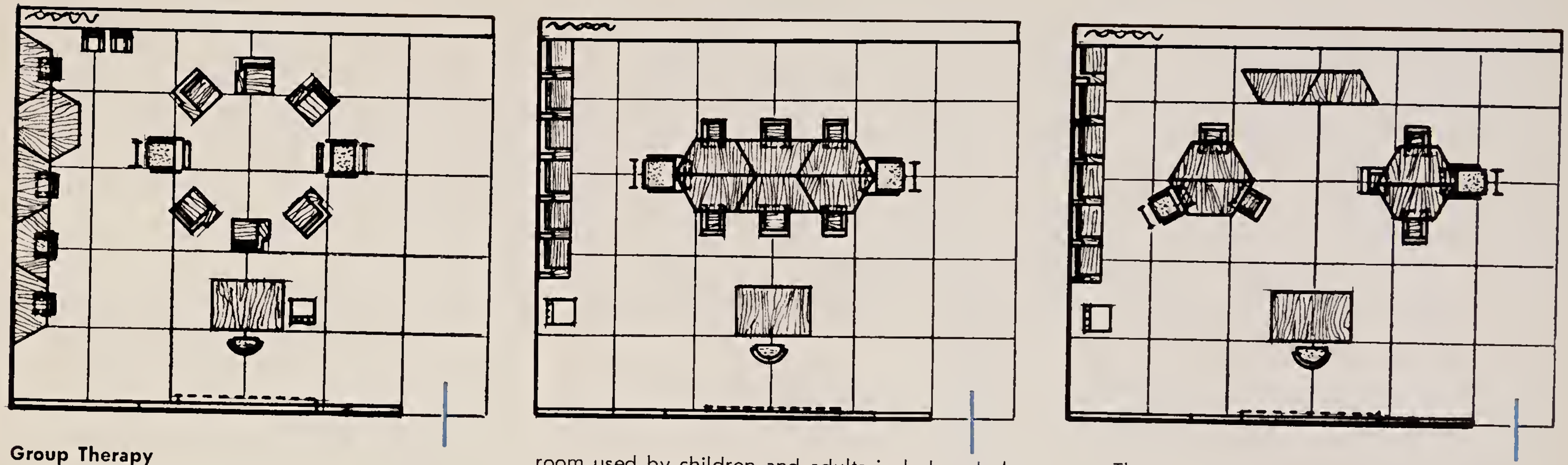
INDIVIDUAL SPEECH THERAPY

— CHILDRENS



GROUP THERAPY

GROUP THERAPY—ALTERNATE ARRANGEMENTS



Group Therapy

Patients frequently require therapy that provides conversation, society, and group participation. Group therapy may sometimes contribute to better utilization of personnel time.

Special equipment should include a "group hearing aid" on wheels, with wiring to headphones. No attempt should be made to include this wiring in the structure, as flexibility in the use of the room would be curtailed. For auditory training or treatment of aphasia, "language master" equipment may be used. Provide also a tape recorder or recorders.

If children's enrollment is sizable, a separate room is desirable; otherwise staggered sessions for use of the room are necessary.

Suggested equipment and furniture for a room used by children and adults includes: desk and chair, six student chairs, six children's chairs, six sectional tables with adjustable heights, chalk board and tack board, and projector and screen.

Other considerations are similar to those required for individual therapy rooms. If the program involves training of personnel, include an observation room with one-way vision glass. (The individual therapy room may be used for this purpose if the program permits.)

Acoustic Design of Therapy Rooms

Therapy rooms should be "quiet" but not "dead." Acoustic treatment of the ceiling and portions of the walls is necessary for small rooms. Double glazing of windows will reduce outside noises, and curtains on the windows may be used to adjust reverberations.

Therapy rooms should not be completely sealed aurally and visually. In this respect they differ from testing rooms, where sound control is most critical.

Air conditioning frequently is a source of noise. If corridors are used for return air, return air grilles in the room should be adequately baffled. Use flexible connectors in duct work, and insulate the ducts. Reduce air velocity in sound-controlled rooms. Equip doors with acoustic seals. A small glazed "peep hole" in the door will eliminate interference with the therapist when he is with a patient.

The services of an acoustical consultant are recommended to assure adequate sound control in the therapy rooms, the test and control rooms and the pure-tone testing rooms.

5. ORTHETIC AND/OR PROSTHETIC APPLIANCE SHOP

Orthetic appliances are medically prescribed for the support of weakened parts of the body and to increase or control their function. Prosthetic appliances are medically prescribed artificial substitutes for a missing body part. Such devices are constructed by orthetists and prosthetists in co-operation with the physician, the physical therapist, and the occupational therapist.

The type of facility for orthetic and prosthetic services will vary widely with rehabilitation centers and is dictated at times by the availability of commercial services.

Frequently, arrangements are made for a representative of a commercial firm to visit the center. For this purpose a fitting room is recommended as a minimum facility, although an office or treatment cubicle is sometimes used and minor adjustments and repairs to appliances are made in the occupational therapy department.

However, a small shop (as illustrated) within the center provides close liaison between the patient, the medical team, and the orthetist or prosthetist. In such a shop, small devices such as feeders and page turners may be fabricated and adjustments and repairs made to wheel chairs, braces, limbs, and crutches.

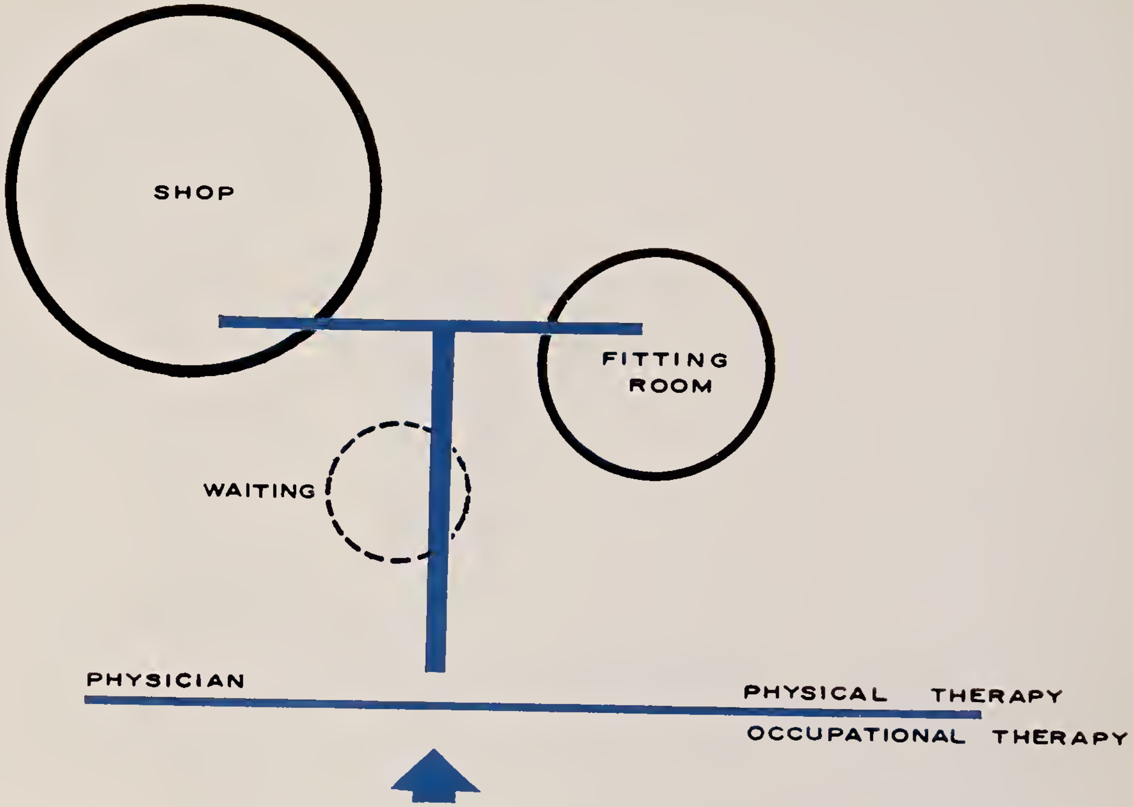
If a minimum facility is established, consideration should be given to its future expansion, not only in terms of space, but with respect to electrical services, ventilation, gas supply, etc.

The fabrication of major appliances requires much heavy and noisy equipment. Isolation of such a shop is essential to the control of noise and reduction of the fire hazard.

Location Within Building

As the orthetic and/or prosthetic appliance shop will serve out-patients requiring minor adjustments or repairs to their devices, the unit should be easily accessible to entrances.

The unit should be located in a noisy zone, and, if possible, near the gymnasium, so that the patient may try out his prostheses or braces. The fitting room, however, may be made sufficiently large for this purpose.



Fitting Room

This room is used for taking measurements and for the fitting and removal of prostheses or braces. It should be directly accessible from the shop and large enough to accommodate wheel chairs.

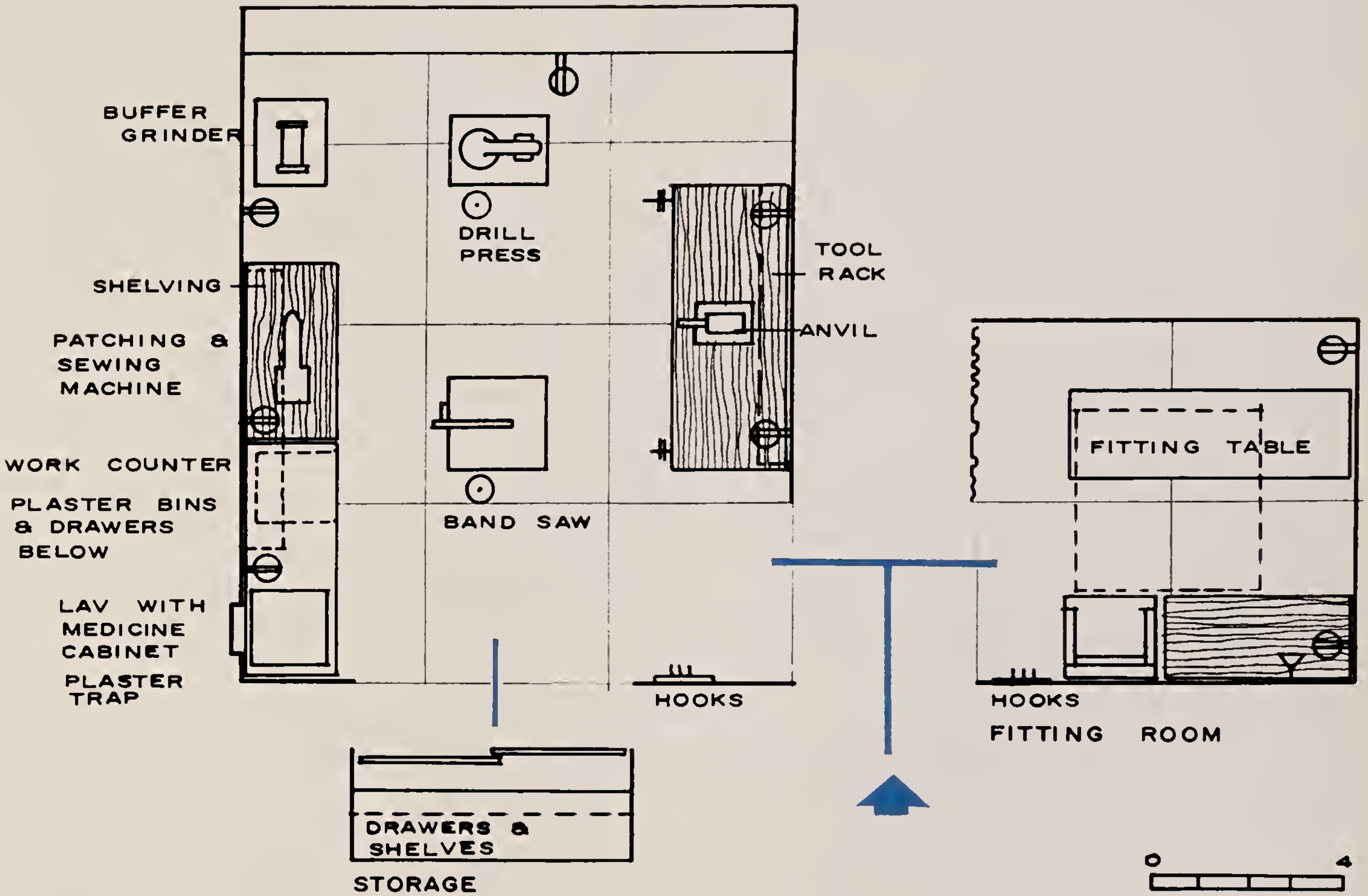
Equipment should include a treatment table with work space on both sides and at one end, a small desk, a chair, and hook strip for clothes, crutches, etc.

If the fitting room is also to be designed to accommodate the trying out of prostheses or braces, it should be large enough to hold a set of parallel bars 15 feet long, a set of stairs, a ramp, and a posture mirror. The fitting room is preferred to the gymnasium for this purpose as it will be available when required and because the patient is often disrobed when trying out prostheses or braces.

Workshop

Minimum shop facilities include a workbench with limb vise, a 4½" heavy duty swivel-type vise, and a 50 lb. anvil. The bench should have 36" clearance at both ends. Equip the bench with drawers and place a tool rack over it. Also include a 14" floor type drill press, a 14" wood and metal cutting band saw, a ¾ h.p. pedestal type buffer and grinder. The sewing machine should be a combination patching and heavy duty type with a movable flat bed. Provide a counter with plaster bins, drawers, and shelving above. Equip a lavatory with a plaster trap, and provide a medicine cabinet.

Provide storage space for replacement parts and other supplies.



ORTHETIC AND/OR PROSTHETIC APPLIANCE SHOP
(MINIMUM FACILITY)

B. SOCIAL ADJUSTMENT

Social adjustment requires psychiatric and social services for the treatment of social and emotional problems.

Psychiatric Service: Frequently the psychiatrist is employed on a part-time basis and is primarily called upon to provide the following services:

i) psychiatric screening to diagnose emotional problems;

ii) staff consultations on how these problems should be managed in relation to the patient's total rehabilitation program;

iii) in-service staff training for the purpose of developing greater understanding of the psychological factors in disability.

Psychological Services include the following:

i) psychological evaluation, accomplished by means of various psychological testing procedures and interviews which evaluate the patient's intelligence and personality;

ii) interpretation of clinical findings to members of the staff;

iii) counseling (therapy) on either an individual or a group basis, usually carried out with the psychiatrist and social service staff;

iv) in-service training of psychologists and participation in psychological research programs.

The minimum recommended psychological facilities would include a psychologist's counseling room and test room.

Social Services include the following:

i) social study and evaluation, including the collection of relevant information from the patient, his family, and other agencies, and the appraisal of such information with respect to the paient's rehabilitation potential;

ii) social casework, where the social worker (medical social worker or psychiatric social worker) works with the patient to improve attitudes toward self-support and motivation toward treatment and work;

iii) social group work, including the correction of abnormal living patterns by using planned group activities, recreational in nature but therapeutic in value. It may include hobby activities, group discussions, and activities of an adult education nature.

Location Within Building

The services should be administered in a quiet area of the building.

As most incoming patients will receive some services in this area, it should be readily accessible from the main entrance of the building.

If the program involves large numbers of children, the psychological therapy room for children should be in the children's treatment-training unit.

Organization of Space

The flow pattern for patients within this area will vary considerably. A typical pattern for the evaluation of a new patient would have the sequence of receptionist, waiting room, social worker (for case history of patient), medical evaluation (for all incoming patients), psychological testing, and psychiatric screening. The two latter services are not needed by all patients.

Vocational counseling, and appraisal of the patient's employment potential in the vocational evaluation unit may also be included in the initial evaluation. Also for this purpose, audiometric screening and speech evaluation are often helpful.

Staff-Patient Ratios

As psychiatric screening and psychological therapy will vary widely with individual patients, no approximation of staff-patient ratios is possible.

For psychological testing a recommended average is two patients a day per psychologist for brief psychological evaluations. This includes the time required for interpretation and writing reports. Extensive psychological evaluation requires one work day per patient, including time for preparation of the report. Other activities such as training, research, and therapy will detract from these averages. This does not provide for evaluation of vocational skills, aptitudes, and interests, which is a function of vocational services.

For social case workers, the number of cases per worker will vary with the number of intake studies and the number receiving continuing service. Where there is a balance between these two types of service, an individual caseworker may handle a caseload of from 25 to 35 patients.

Waiting Room

If the program is of sufficient scope, provide a separate waiting area with a receptionist for the psychological-social unit. In smaller centers, this facility may be incorporated in the main waiting room for the center.

The receptionist schedules patient interviews with the psychological-social staff.

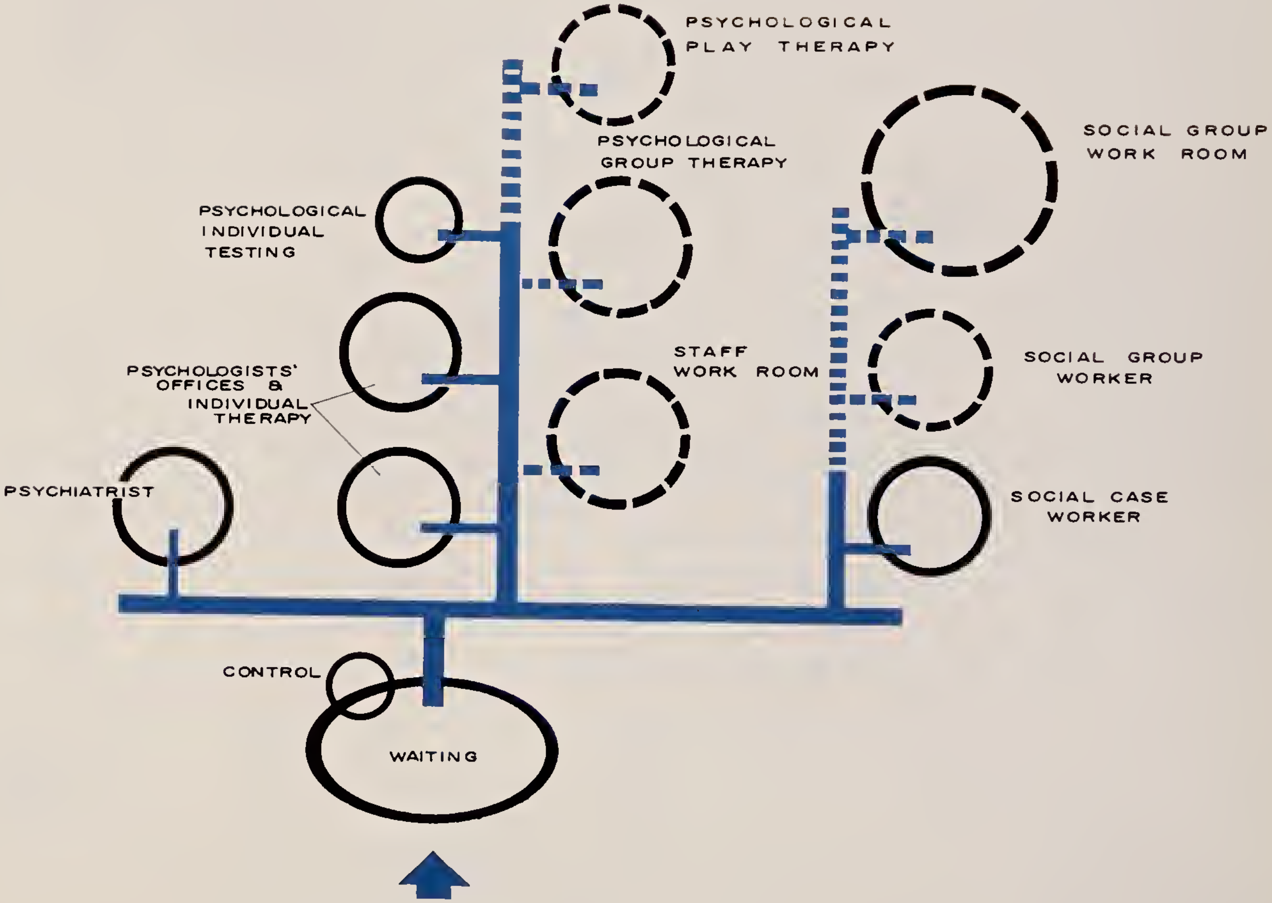
Access to interview and test rooms by means of a sub-corridor will provide privacy and reduce extraneous noise from the rest of the building.

Psychological Training and Research Programs

For a training program, provide observation facilities in the children's play therapy and activity group rooms, such as observation cubicles with one-way vision glass or, preferably, television cameras with screens in a central viewing room.

Provide a separate office for each psychological trainee.

Research programs are of a wide variety. Some involve much equipment; others, no equipment. Provide a separate area for this facility.


PSYCHOLOGICAL PLAY THERAPY
PSYCHOLOGICAL GROUP THERAPY
SOCIAL GROUP WORK ROOM
PSYCHOLOGICAL INDIVIDUAL TESTING
STAFF WORK ROOM
PSYCHOLOGISTS' OFFICES & INDIVIDUAL THERAPY
SOCIAL GROUP WORKER
PSYCHIATRIST
SOCIAL CASE WORKER
CONTROL
WAITING

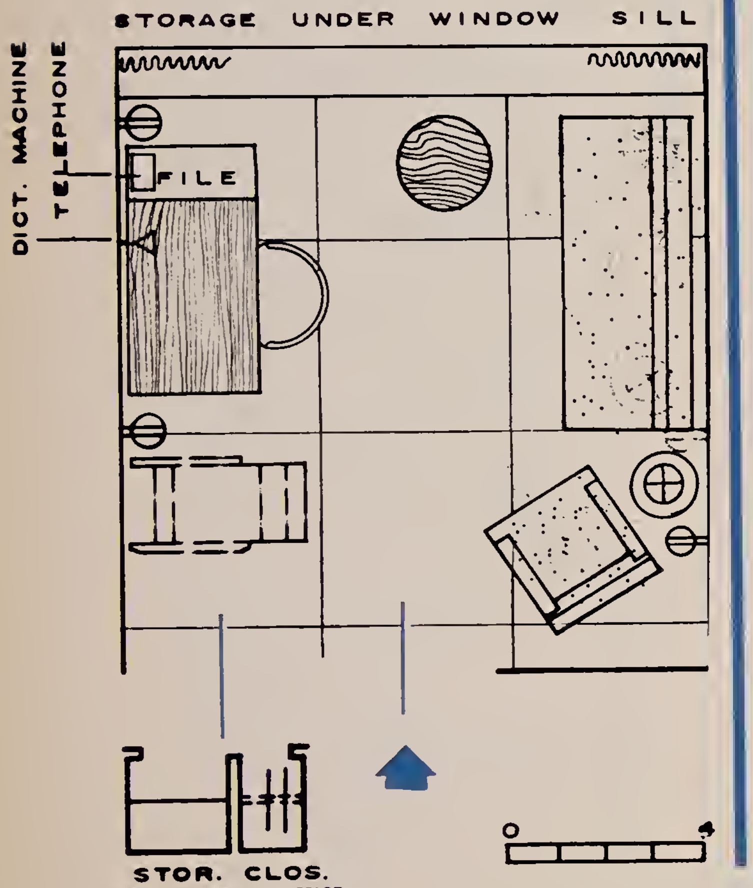
Psychiatrist's Office

This room is used for psychiatric screening.

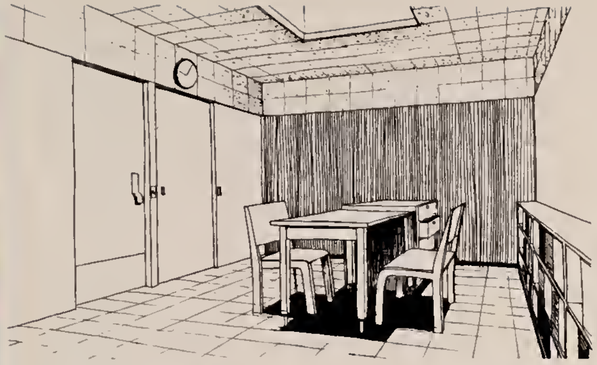
Provide space for the psychiatrist's desk with telephone and dictation machine.

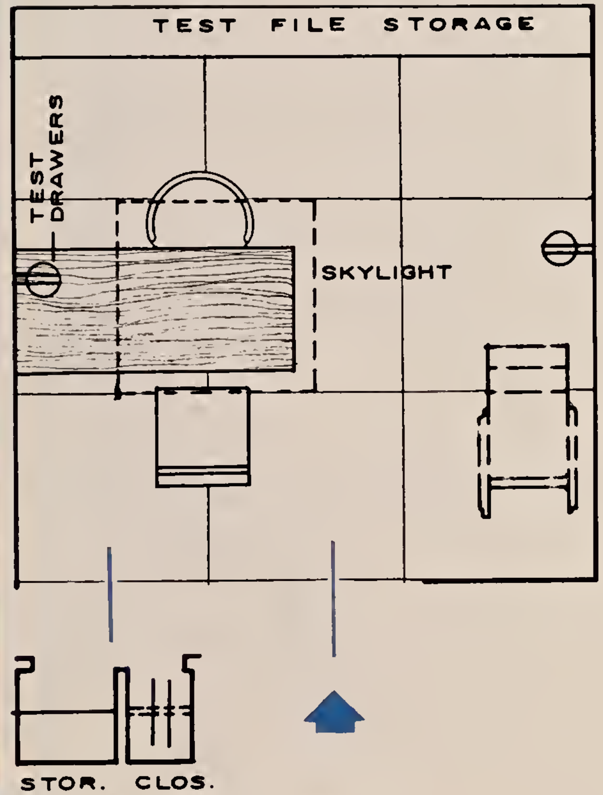
Furnish the room to provide a relaxed atmosphere for the patient.

Treat the room acoustically to assure privacy during interviews.



PSYCHIATRIST'S OFFICE
PSYCHOLOGIST'S OFFICE AND INDIVIDUAL THERAPY





INDIVIDUAL PSYCHOLOGICAL TEST ROOM

Psychological Counseling (Individual Therapy)

The psychologist's office is used for counseling and for individual psychological therapy.

Furnish the room similarly to the psychiatrist's office.

Install a mike jack if a central recording system is planned.

Individual Psychological Test Room

This room is used for psychological evaluation.

Equip it with a desk or work surface with space on each side so that the psychologist and patient will face each other. For children, the desk should be adjustable to, or already at, child's height.

Provide a drawer for papers and stop watches.

A timer with foot operated control on the wall facing the psychologist is recommended in order to eliminate distraction of the stop watch.

Test kits should be handy for the psychologist but out of the reach and direct sight of the patient. They may be installed in drawers rather than in cases (unless a central kit room is provided).

Shelves should be available for storage of stock tests, if no central storage is provided.

Treat the room acoustically for an over-all residual noise level of not more than 40 decibels on the "C" scale.

Natural lighting should be so controlled that distracting views and noise are minimized.

One test room for two psychological counseling rooms is the recommended minimum.

This room should be adjacent to the psychological therapy room.

Group Psychological Therapy

A room is needed to provide counseling with several individuals, in order to take advantage of group interaction.

There should be a maximum of ten patients.

Provide a mike jack if a central recording system is installed.

Furnish this room to create a relaxed residential atmosphere.

Children's Psychological Play Therapy

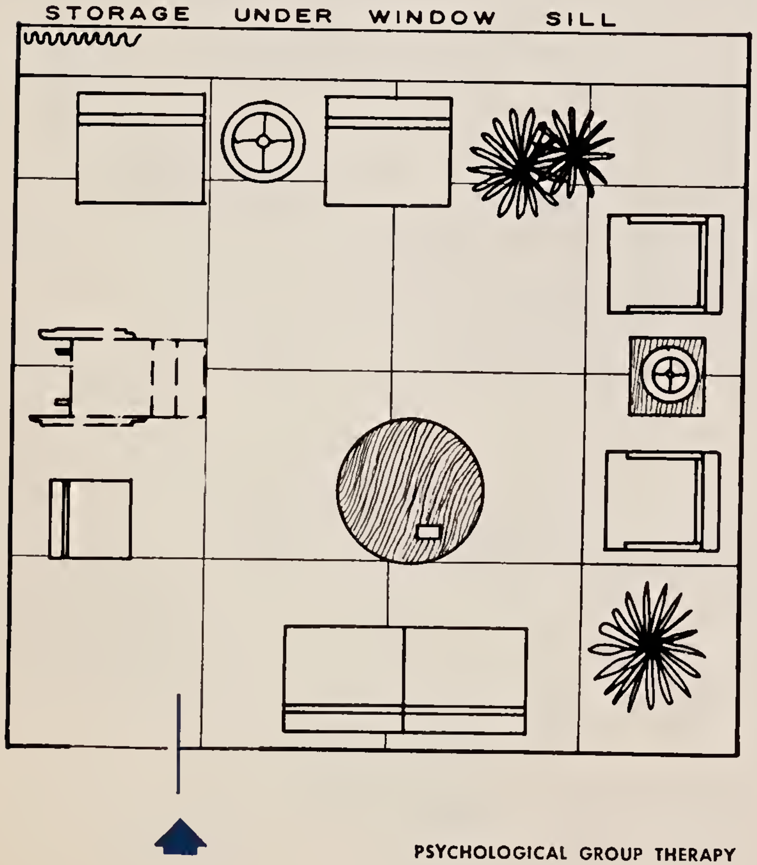
This room is for therapy, generally individual, of children aged 3 to 10.

As children may have uncontrolled emotions, the floor and wall finishes should be washable. Provide a floor drain; sacrifice acoustic control in this room for ease of maintenance.

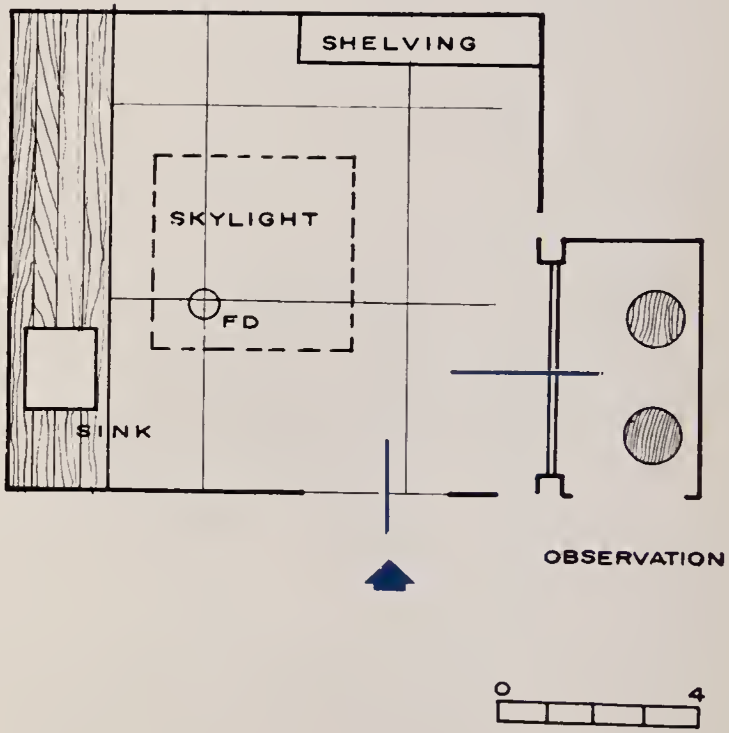
Include a sink and storage space with some open shelves.

There should be no distracting view. If windows are provided, they should have high window sills or be of the security type.

Locate play therapy in the social adjustment area; however, in extensive children's programs, it may be included as part of the children's treatment-training unit.



PSYCHOLOGICAL GROUP THERAPY



CHILDREN'S PSYCHOLOGICAL PLAY THERAPY

Staff Workroom

This room is for more extensive psychological programs.

It should be a combination library, stock room, record room, and conference room for the psychology staff, and should contain:

- i) shelving for library of 40 or 50 manuals;
- ii) shelving for test stock files;
- iii) files for records;
- iv) table for psychology staff conferences.

Social Worker's Office

This office should contain a desk for the social worker with a dictation machine and telephone and a file cabinet.

There should be space for two other persons, usually the patient and spouse, or parents of the child.

It should have an intimate atmosphere, and be sound-controlled to assure privacy during interviews.

Social Group Workroom

This room serves groups of varying sizes up to 20 persons for hobby craft, discussion, and adult education activities.

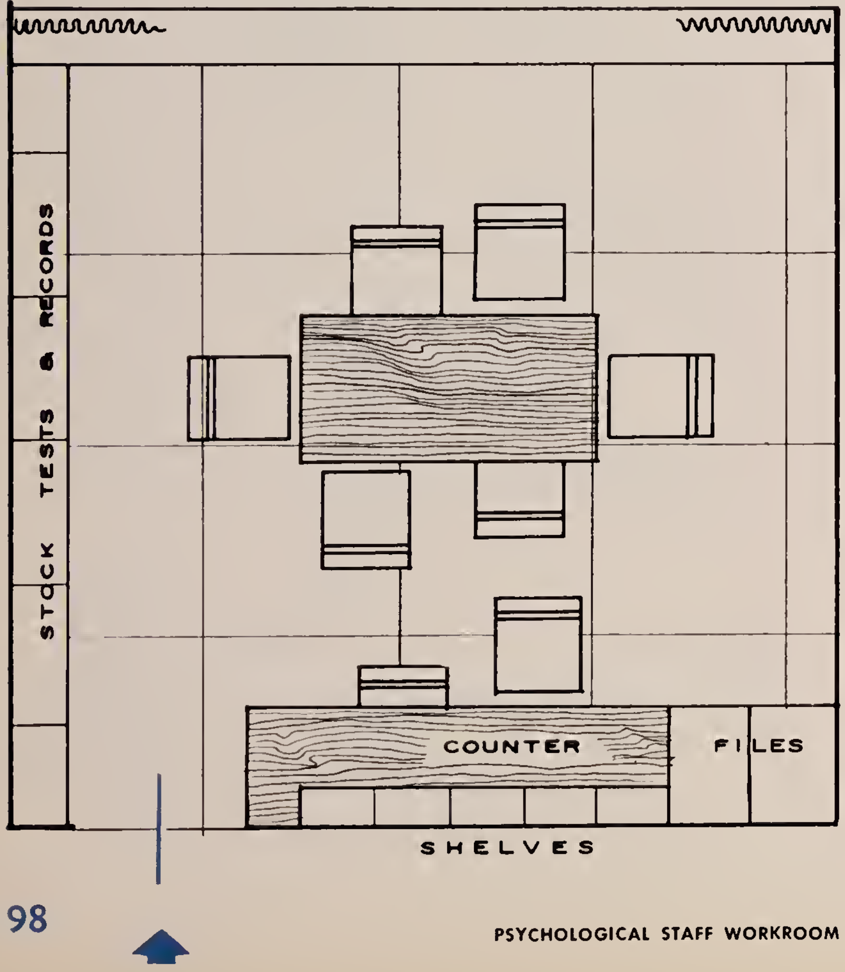
It should have a hobby room atmosphere with sink, work benches, wood-working hand tools and materials.

Provide a relaxed atmosphere. Furnish it with chairs, card and game tables, and shelving for a fiction library.

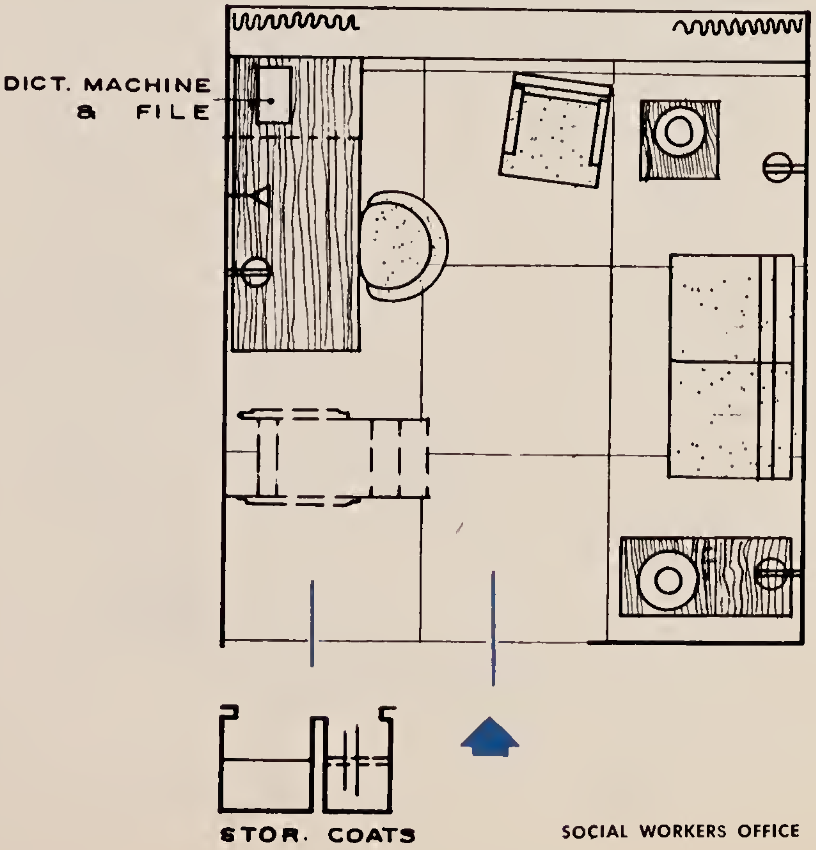
Provide storage for furniture and project materials.

Social group work may share the facilities of the occupational therapy department, the physical therapy gymnasium, and other departments using similar equipment.

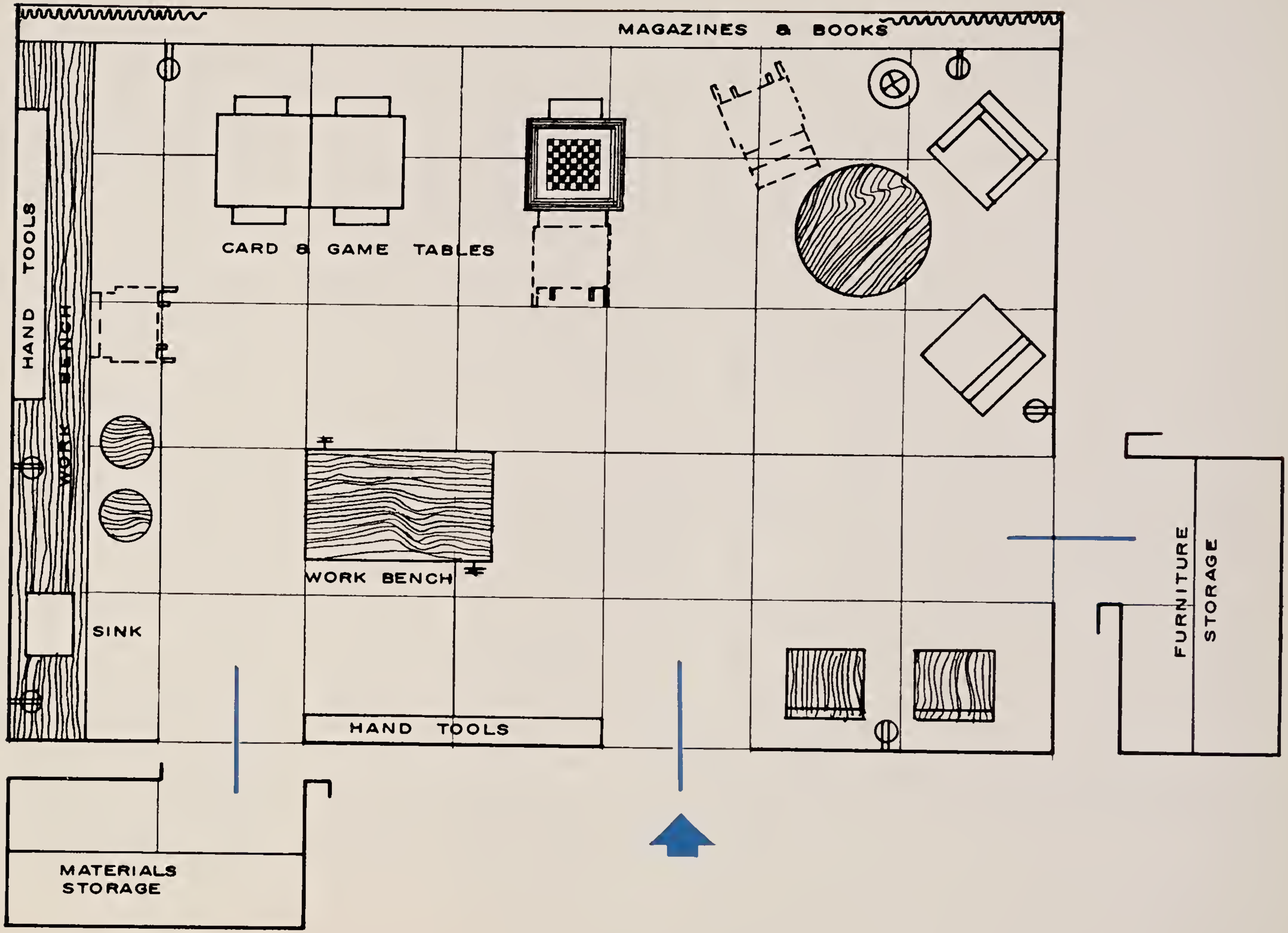
The plan indicates a social group workroom for approximately 12 to 15 patients.



PSYCHOLOGICAL STAFF WORKROOM



SOCIAL WORKERS OFFICE



SOCIAL GROUP WORKROOM

C. VOCATIONAL

The vocational area of a rehabilitation center provides the following services: counseling, evaluation, training, and placement; the sheltered workshop (or rehabilitation workshop) is part of this area, and in some cases, certain aspects of special education will be included. The vocational program is determined by the needs of the patients and the needs and opportunities of business and industry in the community served by the center. This program is a most important part of the patient's total rehabilitation process.

This area has the responsibility of acquainting the patient with situations in industry or in business and of preparing him for job competition. Realistically designed workshops and offices will be required to create a job situation atmosphere for the patient.

This area should present to the patient a very wide range of job possibilities. Few centers will contain an extensive number of job situations; some may have none if this need has been satisfied through the co-operation of a trade school or some other agency. Patients should not be trained for jobs which they cannot obtain later.

Changing types and techniques in industry make it essential that this area have maximum flexibility, especially in heating, ventilating, plumbing, lighting, electrical installations, and equipment placement. The vocational area must offer training in small segments of a job operation and present advanced types of vocational opportunities.

Vocational counseling provides an opportunity for the patient to obtain an understanding of his vocational abilities and potential, and to learn the scope of their possible application. The center may choose to work with co-operating counselors already established in the community, if it does not provide this service within the center. Sometimes counselors are loaned to centers by the State Vocational Rehabilitation Agency and conduct their work at the center.

Vocational evaluation is the process of collecting and appraising data on the patient's interests, aptitudes, and ability in work situations. This section needs to be quite broad in scope in order to find the vocation best suited and most satisfying to the disabled person. This section of the center's program is frequently referred to as a pre-vocational unit.

Vocational training provides the discipline necessary for the patient to attain his job potential established in vocational evaluation. Vocational training requires carefully supervised instruction in vocations best serving the patient's needs with full regard to employment possibilities.

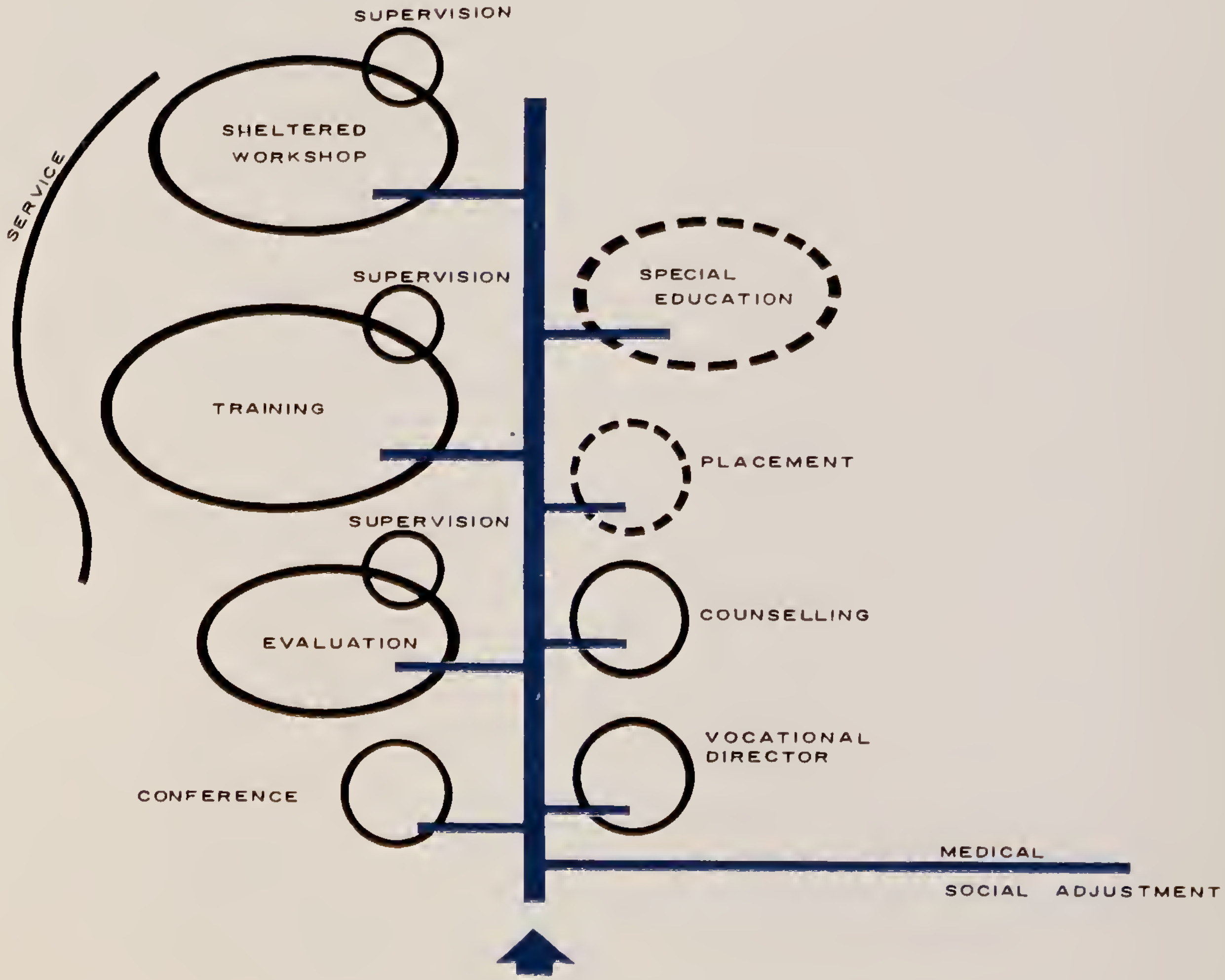
Sheltered workshop provides employment for disabled persons within the center. This is productive work for which wages are paid; the work is usually obtained on contract or sub-contract basis. In this area, further vocational evaluation and training is possible.

Special education will be found in this area when enough patients have difficulties with certain areas of academic or vocational achievement. If children need this service, it may be located in their area. Frequently, this is provided through co-operation with the public schools.

Placement service is to be offered when the number of job placements and contacts warrants it; otherwise this service is performed by other agencies. In smaller centers placements may be handled by the vocational counselor. Placement may mean the patient's return to his former job, full employment by selective placement or partial or special employment either at home or in the sheltered workshop.

Supervisors will be in charge of the separate units of this area and will be responsible for integrating their unit with the total vocational effort.

The **director** will be in charge of the total vocational area and responsible for integrating this area with the rest of the rehabilitation center program.



1. VOCATIONAL EVALUATION

The purpose of vocational evaluation is to determine the patient's vocational assets and limitations and to assist him in setting realistic employment goals. Consideration is given not only to aptitudes and interests but also to physical limitations, intellectual capacity, and emotional factors.

The vocational evaluation unit (frequently called pre-vocational unit) uses the technique of job sample or reality testing. This may be supplemented by the use of standardized performance tests. A unit includes a wide range of job areas typical of the industrial and business community. It normally will include evaluation in commercial occupations, skilled and semiskilled hand assembly, and operation of mechanical equipment. In some instances various skilled and semiskilled trades will be appropriate as well as a wide range of simple hand assembly tasks and unskilled activities in the service and maintenance fields.

The recommendations resulting from the vocational evaluation process may be concerned with immediate job placement or indicate the need for training in a specific area prior to employment. The period of evaluation may also contribute to the development of confidence in the patient and will give the evaluator insight into the patient's work habits, work tolerance, and his ability to cope with an actual job situation. It may also incorporate experimentation with adaptive devices and changes in work site needed by the patient to best meet the job requirements.

Careful selection of job areas to be included is most important. Primary consideration should be given to the type of employment in the community that offers the widest opportunities for the disabled persons served by the unit. A duplicate of every job should not be attempted. Emphasize basic job areas where the results can be related to a number of occupations requiring similar skills.

For activities having limited application, make use of the center's administrative and maintenance departments, or of co-operative arrangements with local industry. These alone are no substitute for an evaluation unit, but can give depth and variety to the program.

Employment opportunities as well as the types of disabilities served by the center change over a period of time; hence the evaluation unit should be flexible and able to shift its emphasis as required. In addition, concentration should be on sedentary activities requiring a range of hand skills.

Consider some of the following for inclusion in an evaluation unit when appropriate to local conditions:

Location Within Building

As certain vocational evaluation activities are noisy, this department should be removed from quiet zones.

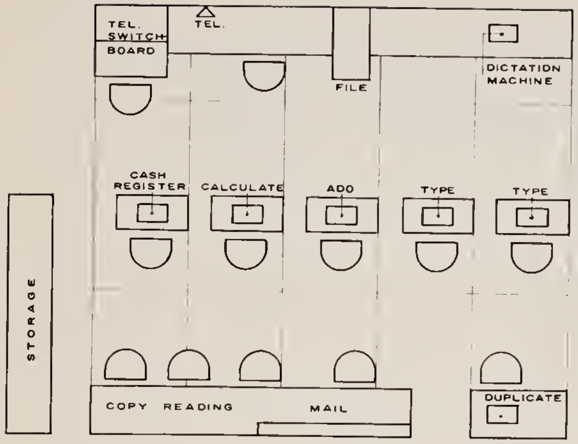
For receiving materials and equipment, locate the department near a service area.

Staff-Patient Ratios

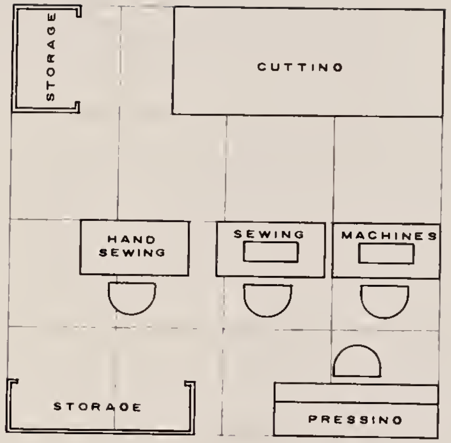
The evaluation process usually requires full-time attendance by the patient on at least a six-hour day basis for a period of three or more weeks. Attendance for less than four hours per day is usually not feasible.

An evaluation unit is usually staffed by one man: the vocational evaluation supervisor. Patients served by the evaluation unit receive as much instruction from the supervisor as is needed. Frequently, emphasis is given to how well the patient can follow verbal or written instructions.

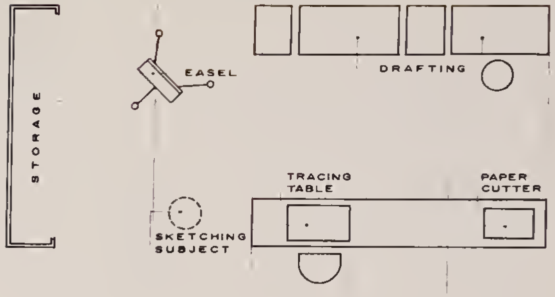
One full-time supervisor may handle up to 15 patients at one time. If vocational counseling and other duties are also assigned, this ratio must be reduced proportionately.



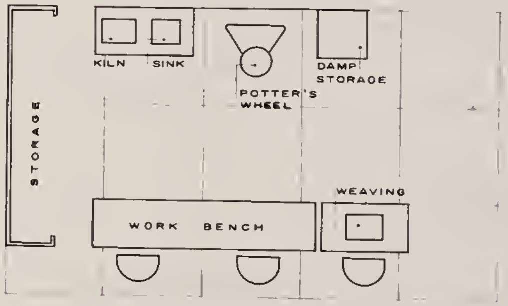
I. Commercial
- i) typists;
- ii) secretaries;
- iii) bookkeepers;
- iv) telephone operators;
- v) cashiers;
- vi) business machine operator;
- vii) copy readers;
- viii) bank tellers;
- ix) ticket agents;
- x) receptionists;
- xi) shipping and receiving clerks;
- xii) file clerks;
- xiii) sales clerks.



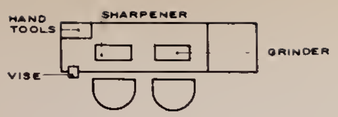
II. Skilled and Semiskilled
- A. Sewing and Tailoring
  - i) spreaders;
  - ii) markers;
  - iii) cutter;
  - iv) trimmers;
  - v) pattern makers;
  - vi) pattern graders;
  - vii) tailors;
  - viii) pressers;
  - ix) hand sewers;
  - x) sewing machine operators;
  - xi) weave-bac specialists;
  - xii) chair cover makers.

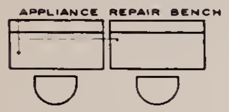


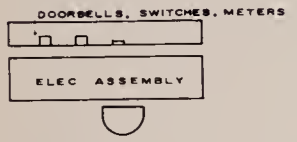
Skilled and Semiskilled
- B. Drafting:
  - i) electrical draftsmen;
  - ii) automotive draftsmen;
  - iii) architectural draftsmen;
  - iv) mechanical draftsmen.
- C. Commercial Art:
  - i) layout men;
  - ii) illustrators;
  - iii) letterers;
  - iv) window display artists;
  - v) show card layout.

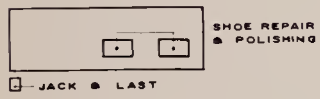


Skilled and Semiskilled
- D. Arts and Crafts:
  - i) ceramics;
  - ii) leather;
  - iii) metal work;
  - iv) weaving;
  - v) jewelry;
  - vi) electroplating.







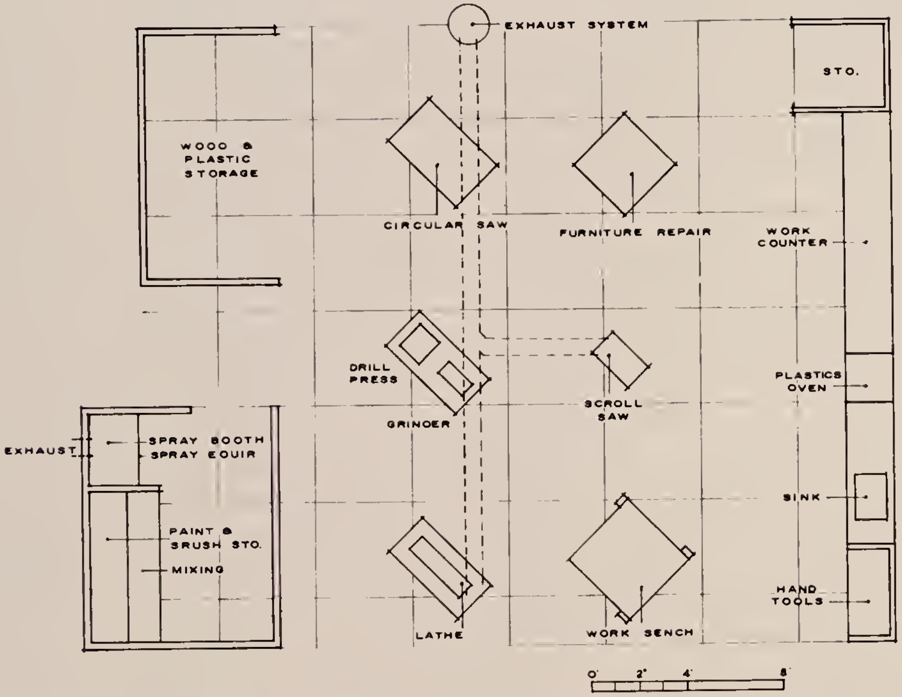


Skilled and Semiskilled

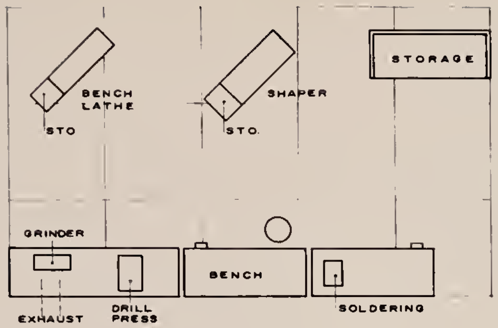
- E. Repairmen:
  - i) business machines;
  - ii) watch repairing;
  - iii) assemblers;
  - iv) tool sharpening;
  - v) camera repairing;
  - vi) shoe repairing.
- F. Electric Light, Power, and Electronics:
  - i) meter readers;
  - ii) meter men;
  - iii) assemblers;
  - iv) inspectors and testers;
  - v) radio, television, electronic machine repairmen.

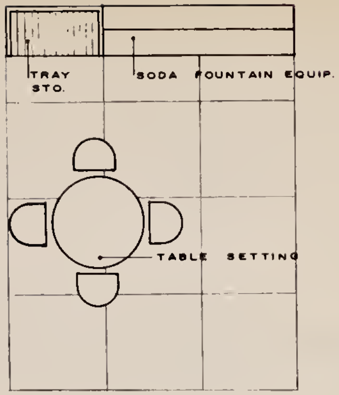
Skilled and Semiskilled

- G. Building Trades:
  - i) carpenters;
  - ii) painters;
  - iii) plumbers;
  - iv) masons;
  - v) electricians.
- H. Woodwork Trades:
  - i) patternmakers;
  - ii) cabinet makers;
  - iii) furniture repairmen.
- I. Plastics Production:
  - i) bench grinders;
  - ii) hand filers;
  - iii) drill press operators;
  - iv) assemblers.



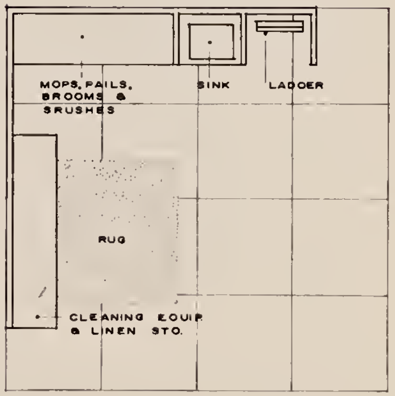
III. Machine Shop Operations:
- i) tool and die makers;
- ii) machine tool operators.





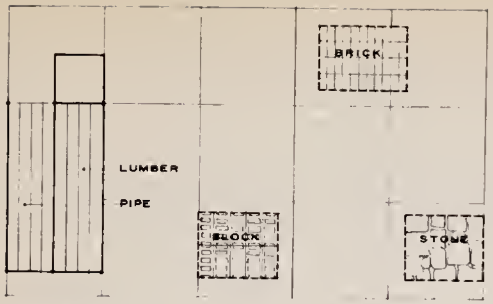
IV. Unskilled

- A. Restaurant Occupations:
  - i) waiters and waitresses.

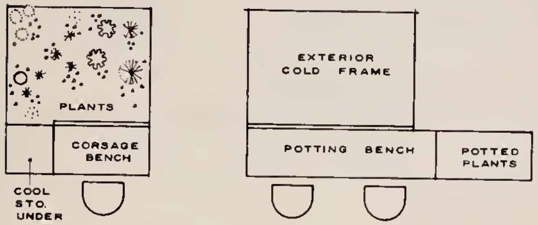


Unskilled

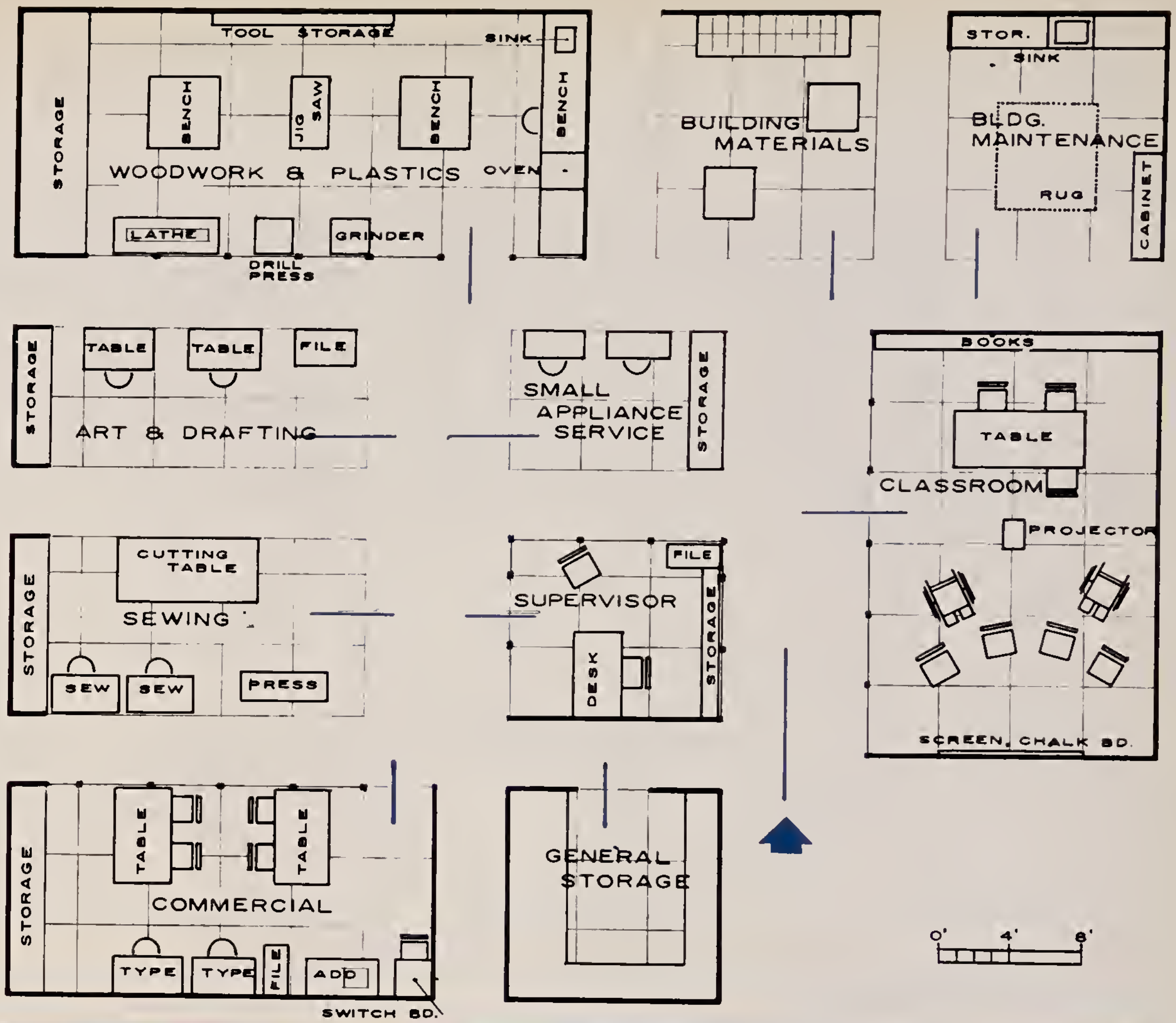
- B. Building Maintenance:
  - i) janitors; ii) housekeepers.



Unskilled
C. Building Material Handling



Unskilled
D. Greenhouse and Floriculture:
i) greenhouse worker;
ii) flower preparation (corsages, etc.).



VOCATIONAL EVALUATION UNIT

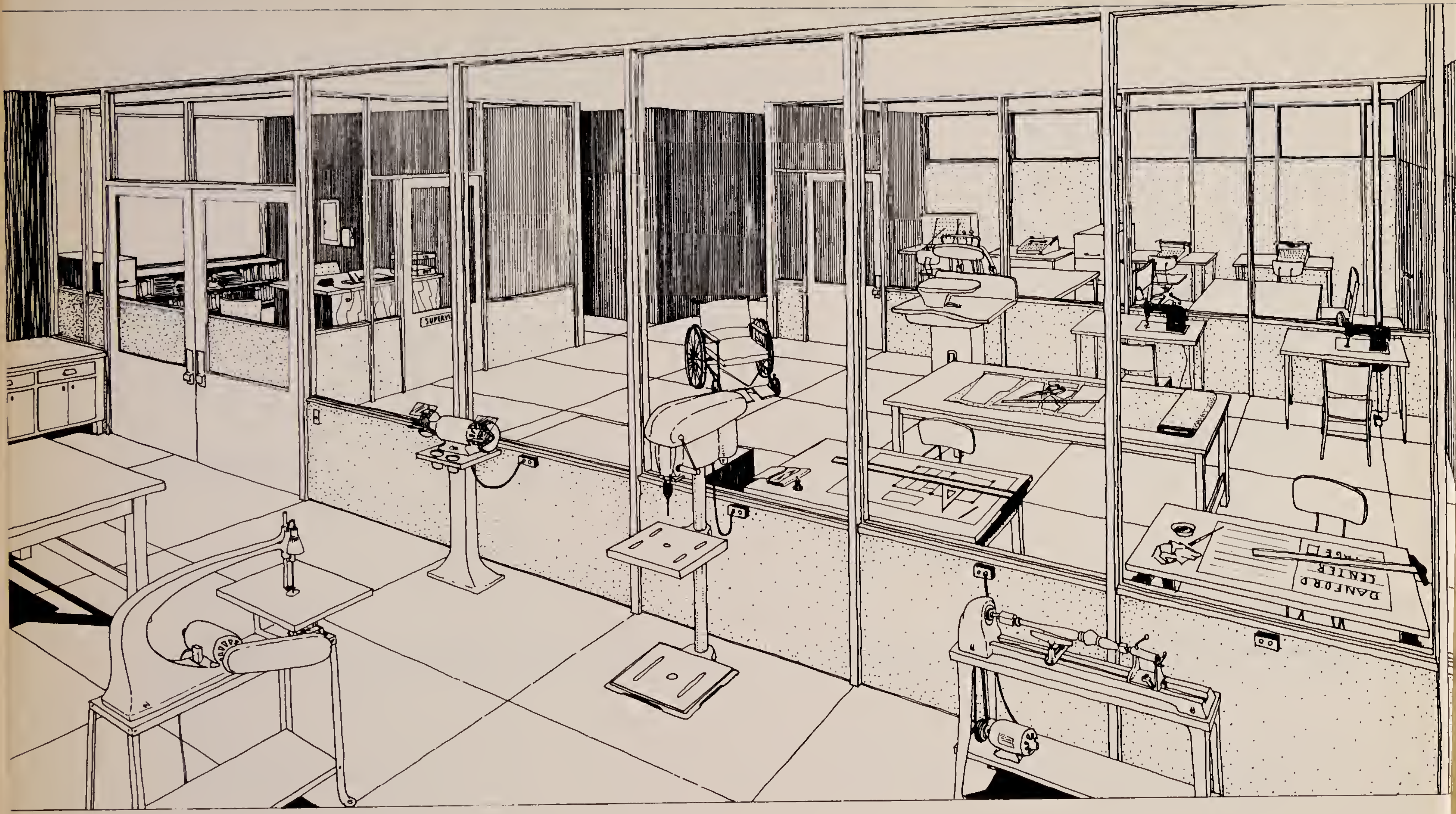
Organization of Space

The layout indicates a suggested vocational evaluation unit with elements representing a sampling of the categories previously illustrated.

An area of 1,000 square feet for a vocational evaluation unit is considered a minimum.

By virtue of the admission policy of the centers, and rotation of patients through the job areas in the unit, only a few persons are on the same job sample at the same time. Consequently, overcapacity in any area results in waste space and more difficult supervision.

Space within the department should be subdivided according to basic occupations with convenient storage of small equipment and supplies for each area. Areas with table top work surfaces that can be used for many types of handwork activity permit considerable flexibility of the


SUPERV
DANFORD
CENTER

work emphasis and also economize on space.

Areas requiring common utilities—power, gas, compressed air, water—if designed around utility cores will result in economy of installation.

Allow adequate space for work stations, for the handling of materials, and for general circulation of patients using wheel chairs, crutches, and even stretchers. Provide ample storage: local cabinets for daily needs but also general storage. Frequently, equipment may be used for a time and then stored in the area until there is need for it again.

As the programs will change, plan for maximum flexibility in subdivision of space. Considerations should be given to the use of movable storage units and glazed partitions to separate various activity areas for the control of noise and dirt.

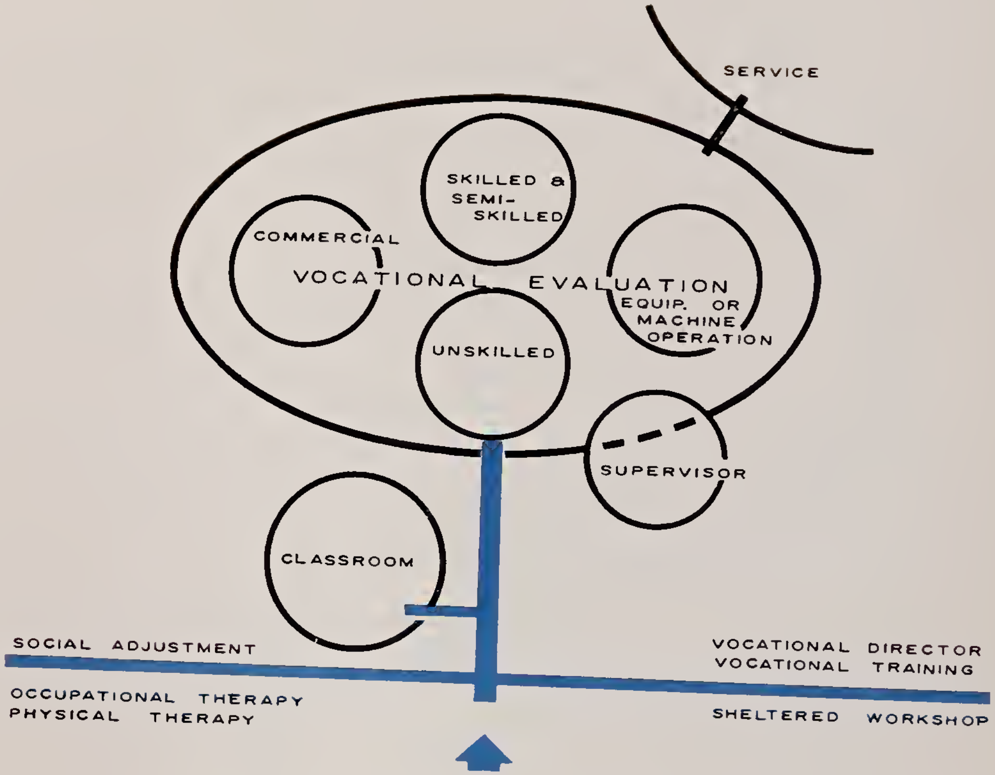
The supervisor's office should have maximum visual control of the activity area.

A classroom for instruction in theory should adjoin the evaluation unit. It can also be used for testing, demonstrations, displays, conferences, and small library. Furnish the room with visual aids equipment.

Supervisor's Office

The office space for the supervisor of the evaluation unit should have visual control of the unit and therefore be located in or immediately adjacent to it.

Electrical controls should be kept in this office and also at key points throughout the area in order that power machines may be cut off in emergencies.



2. VOCATIONAL TRAINING

Vocational training is prescribed after evaluation of the patient's abilities, interests, and job training has begun.

The vocational training unit provides opportunity for growth in ability and assurance in actual job situations or experiences as close to reality as possible. During this period of training, the patient may continue to receive services from the medical unit, the social adjustment unit, or any other part of the rehabilitation center.

Differences in disabilities and the nature of the community will dictate differences in the kind of training program to be employed. In addition to working with local industry, the local training resources will supplement the center's training programs whenever practicable and suitable. Trade schools may accept only the more capable candidates who do not have emotional or medical problems, and in some cases, they may not be able to give the personal attention needed. The rehabilitation center deals with complex problems and disabilities; therefore, its vocational training unit will need to give greater emphasis to limited training objectives which are often more suitable to the restricted educational and cultural backgrounds of many of its patients.

Training in a range of vocations should be offered to accommodate several levels of abilities, skills, and interests. In addition, the changing personnel needs of industry make a representative range important.

There follows a sampling of some of the vocational training fields that the architect may be called upon to plan for:

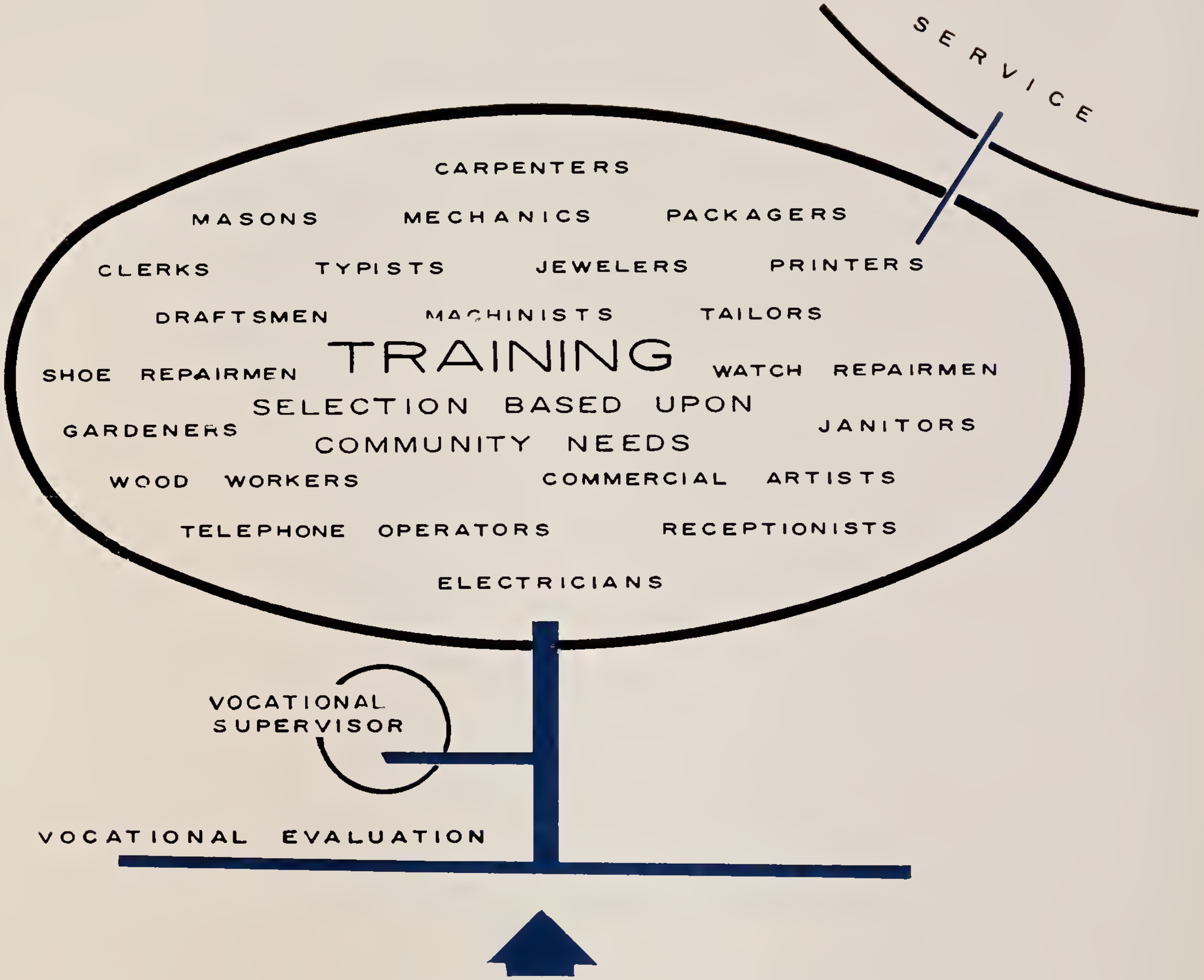
i) commercial;
ii) tailoring;
iii) drafting;
iv) watch repair;
v) shoe repair;
vi) furniture repair and upholstering;
vii) machine shop operation;

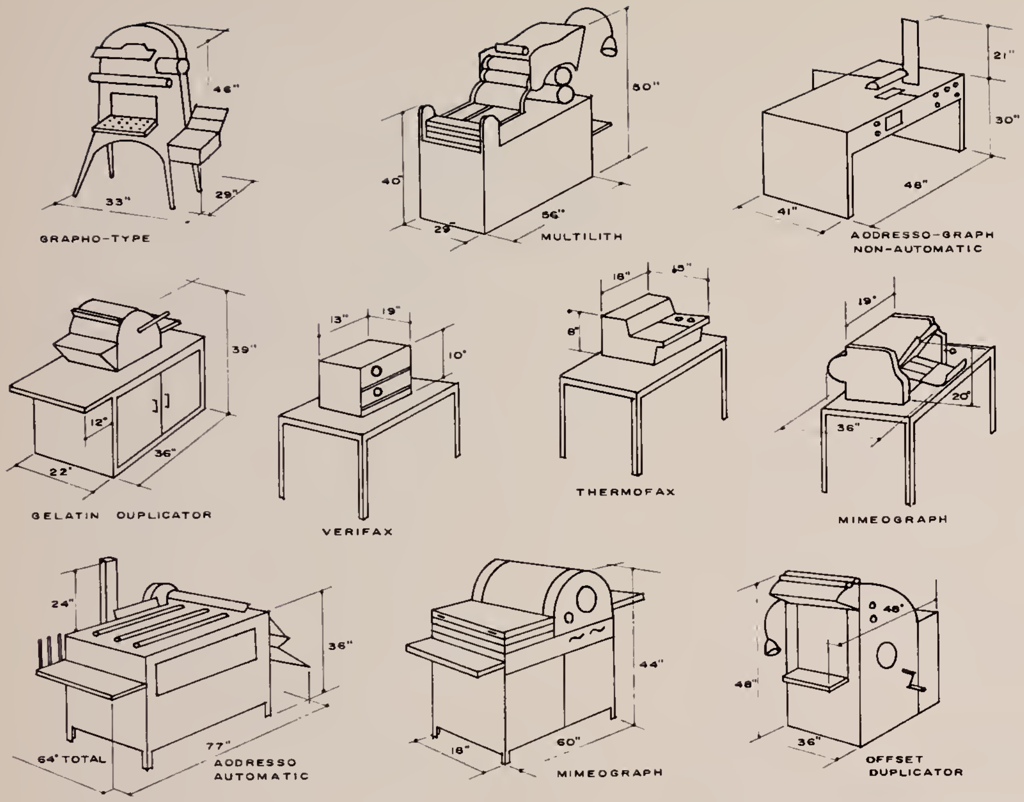
viii) radio, television, and appliance repair.

Commercial. The patient is helped to acquire competence in the use of business machines and business practices and assurance in a business environment. This area should provide training for typists, secretaries, bookkeepers, telephone operators, cashiers, business machine operators, ticket agents, receptionists, file clerks, and others. Depending upon space available, training in these vocations can sometimes be provided in the business offices of the center.

Several kinds of machines should be used to acquire diversified skills to meet any office situation. Machines should be selected that are most commonly used in the community being served or are used in offices that accept placements from the center.

As an indication of the variety of equipment, illustrated below is a selection of duplicating equipment.





Additional Machines to Consider

i) full-blank adding listing machine;
ii) ten-key adding listing machine;
iii) long-carriage typewriter;
iv) standard electric typewriter;
v) rotary calculator;
vi) key driven calculators;
vii) transcribing machines;
viii) standard typewriters;
ix) demonstration stand;
x) copyholders;
xi) switchboards;
xii) cash registers;
xiii) addressograph;
xiv) postage scales;
xv) check writer;
xvi) miniature filing set;
xvii) paper cutters;
xviii) photocopy.

Training in clerical and business fields is frequently selected by wheel chair patients; provision should be made to accommodate them at each work station. Four-foot wide aisles are recommended, and work surfaces should be adjustable for patients with various disabilities.

Many business machines are electrically operated. To permit flexibility in the use of space, a grid system of electrical floor outlets for each work station, 4'-0" x 6'-0", is recommended. A central control switch should be installed to shut off all power equipment in the commercial area at termination of classes.

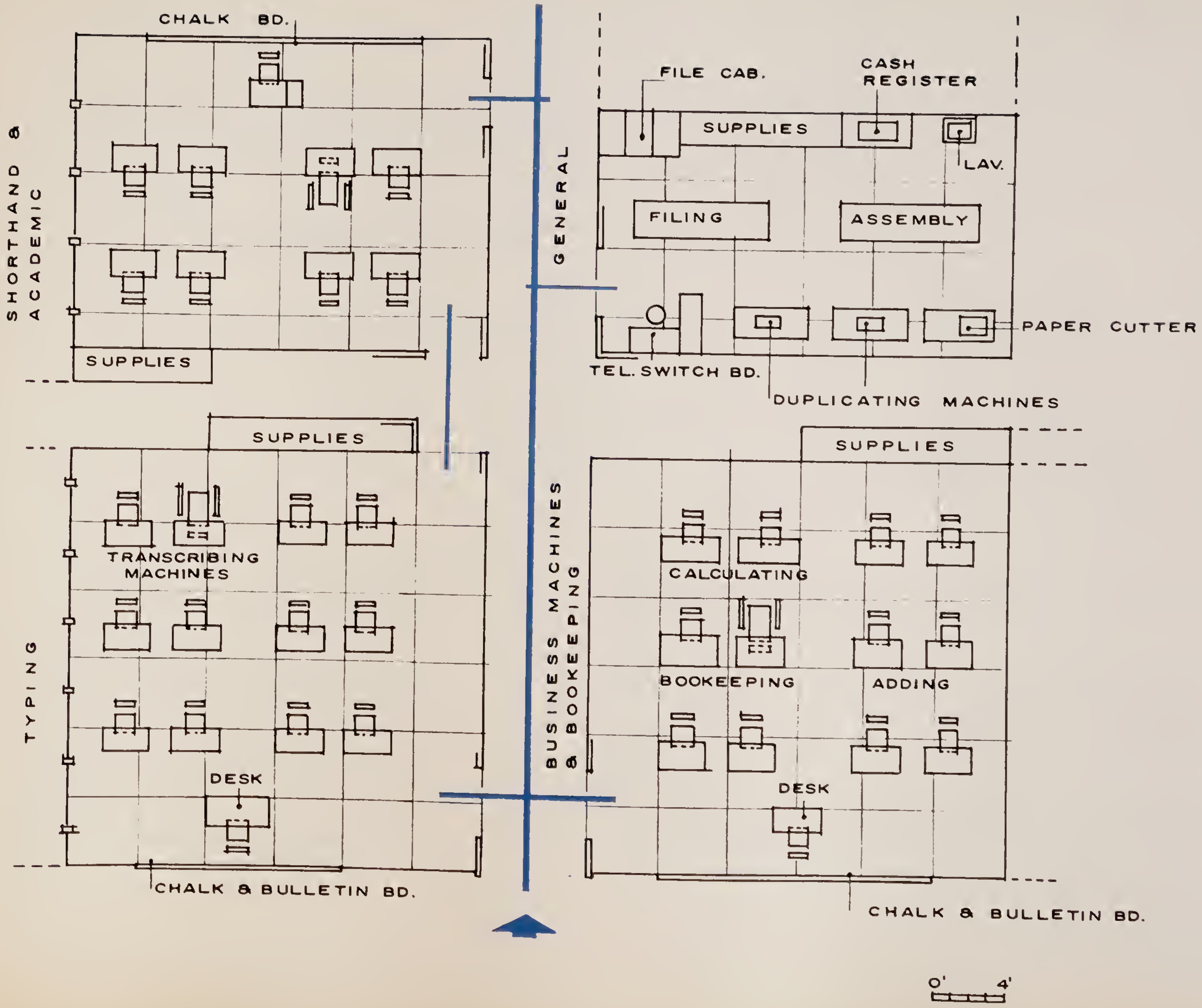
Arrange work stations for natural light to fall over the student's left shoulder, except in typewriting, where light from the right or back is recommended. Lighting fixtures should produce a recommended level of illumination of 150 foot-candles at the work surfaces.

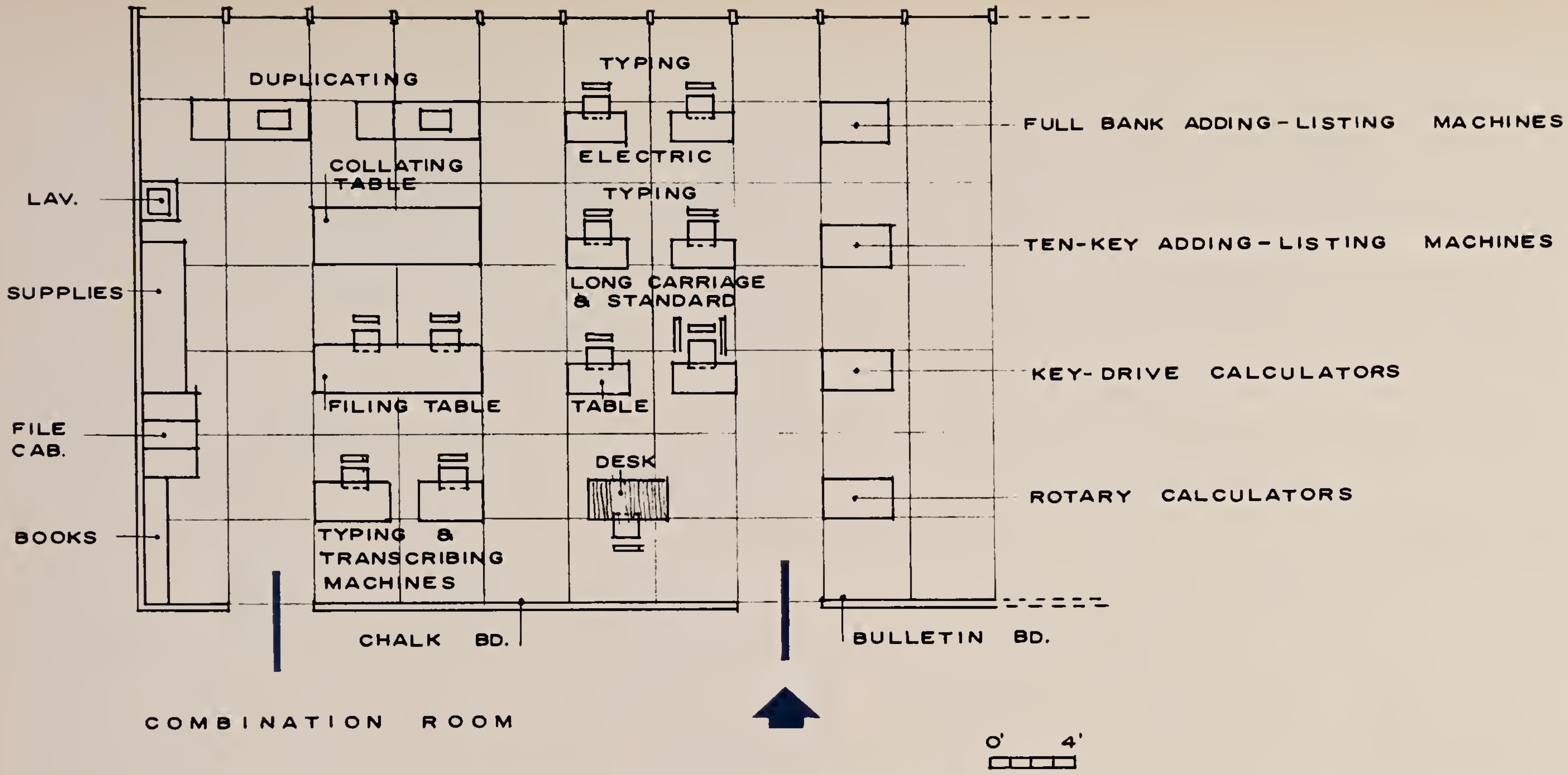
Acoustic treatment of rooms is recommended to control noise of machines.

Rooms should be equipped with chalk boards and bulletin boards. In the case of bookkeeping, the chalk board should be scored for bookkeeping instruction.

Several room arrangements and combinations of rooms are possible in a commercial training area. Indicated are a single room arrangement and a four-room layout.

The single room, or combination room, includes a representative selection of basic equipment for commercial training. The equipment will vary according to the emphasis of the commercial


CHALK BD.
SHORTHAND & ACADEMIC
SUPPLIES
GENERAL
FILE CAB.
CASH REGISTER
SUPPLIES
LAV.
FILING
ASSEMBLY
PAPER CUTTER
TEL. SWITCH BD.
DUPLICATING MACHINES
SUPPLIES
TYPING
TRANSCRIBING MACHINES
DESK
CHALK & BULLETIN BD.
BUSINESS MACHINES & BOOKEEPING
SUPPLIES
CALCULATING
BOOKEEPING
ADDING
DESK
CHALK & BULLETIN BD.
0'
4'



COMBINATION ROOM

program. Indicated equipment is for instruction in business machines, typewriting, duplicating, and filing.

In the use of the four-room layout, separate areas are assigned to instruction in shorthand, typing, use of business machines, bookkeeping, and general office work.

The room allocated to shorthand instruction may also be used for academic instruction related to commercial training. The shorthand area should be connected directly to the typewriting room. As not all students being trained in typing will take shorthand, the number of work stations should vary accordingly. Equip the typewriting room with both manual and electric typewriters.

In the business machines and bookkeeping area, calculators (key-driven and rotary), adding machines (full-bank and ten-key), and bookkeeping machines are indicated. It is important that adequate work spaces be provided beside the machines. Some tables may be left free of equipment for academic instruction in bookkeeping.

The general office work area includes duplicating machines, paper cutter, sorting table, filing table, files, and telephone switchboard. This area may be expanded to include addressing machines, staplers, bailers, stuffing machines, and similar equipment used in larger offices.

For a commercial training program of this size, a separate office for the supervisor of the commercial training program should be provided.

Tailoring

A number of operations, particularly sewing, are applicable to many disabilities. Machines may be modified in some cases to suit the patient's particular disability.

Before laying out a tailoring program, the clothing industry in the area should be consulted to determine types of operations and machines that should be used.

The sewing area may include special machines for particular operations such as overedging, or standard machines, or a combination of both. Tailoring will involve hand sewing and pressing.

Certain operations will require the sewing station to be augmented with bins, trucks, or additional work surfaces.

Adjoining the sewing machine area, a cutting area is necessary. The cutting tables should be about 4'-0" wide.

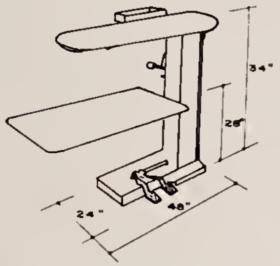
Power to the sewing machines should be flexibly planned to permit rearrangement of machines. Overhead power ducts are recommended. An overhead source of power at the cutting table is also recommended for machine cutting.

General illumination of 50 foot-candles is recommended with supplementary lighting at the machines up to 500 foot-candles, depending on the task.

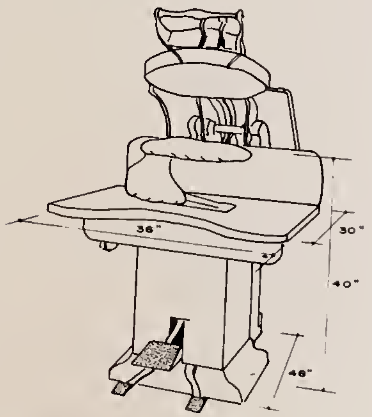
As an adjunct facility, the sewing area may be furnished with finishing boards and pressers. Exact mechanical requiremetns of such equipment for steam and electrical power should be checked with the manufacturer. Provide adequate ventilation for this activity.

Provide storage space for cloth bolts and other materials, and also storage for finished products.

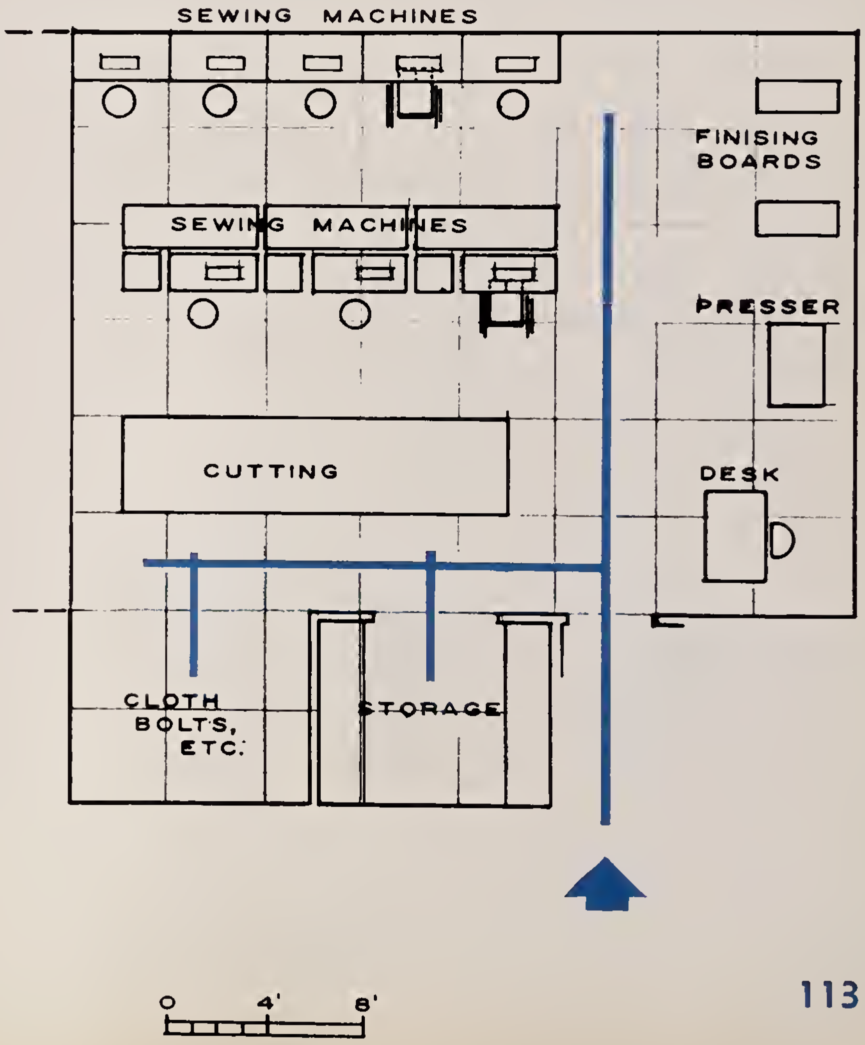
Place the supervisor's desk at a control point with good visual control of the area. Twelve to fifteen students per instructor is a recommended average.

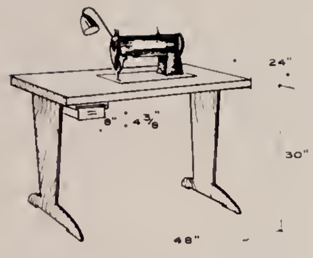


FINISHING BOARD

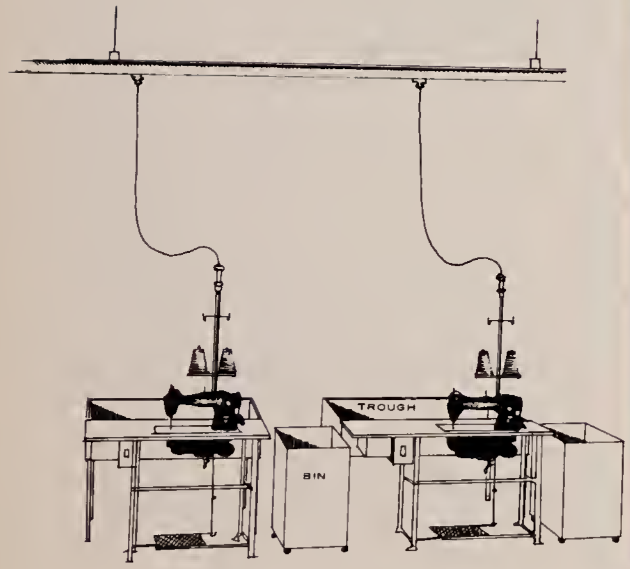


PRESSING MACHINE



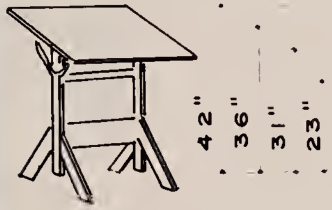


SEWING MACHINE

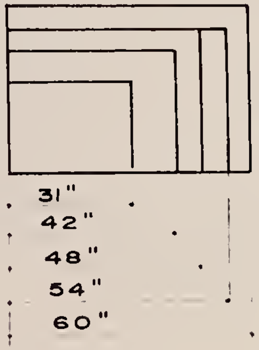


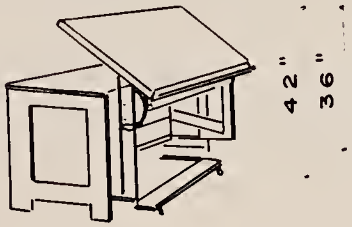
Drafting

Vocational training in drafting has several areas of emphasis: these include architectural, electrical, automotive, and mechanical drafting, and patternmaking. Some training for commercial art, especially lettering and show card or poster painting, can also be done in this area, depending upon the patient's requirements and the instructor's qualifications. It would seem advisable in some centers to specialize in this type of drafting so that the area can become known for the quality of its drawings. Some of the equipment needed is illustrated. Adequate light for all drawing boards and maximum flexibility are essential. There are many ways to tailor this equipment to the individual. Each training station needs work space and reference space. Provide areas of common storage as shown.

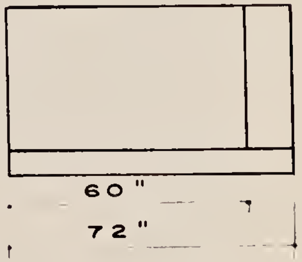


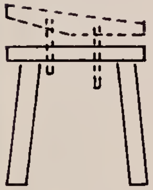
BASIC TABLE



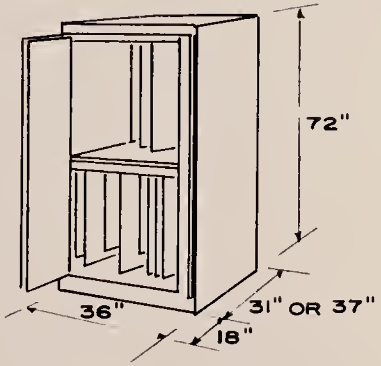


ADJUSTABLE TABLE

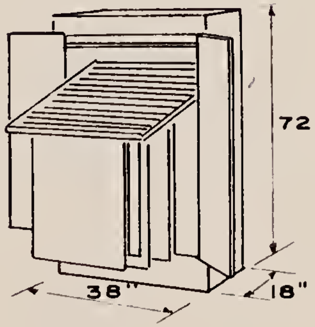




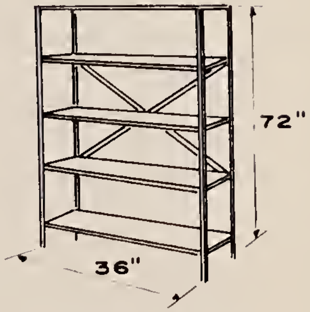
ADJUSTABLE



CLIP FILE



VERTICAL FILE



ADJUSTABLE STEEL SHELVES

Space requirements will be determined by the number of work stations: 12 to 15 is recommended in order to obtain a high caliber of instruction. The area around work stations should allow space for wheel chair patients, and work surfaces should be adjustable in height.

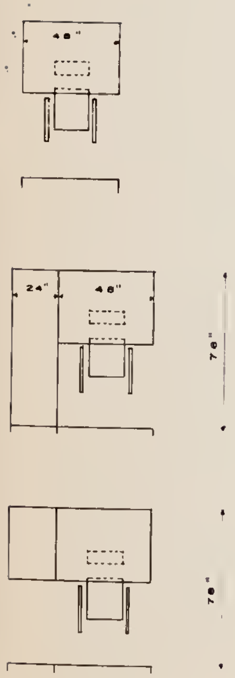
The drafting area should be equipped with file cabinets for storage of catalogues and with flat files for drawings and paper. General reference books should be readily accessible. A sink with hot and cold water, designed for wheel chair patients' use, is essential.

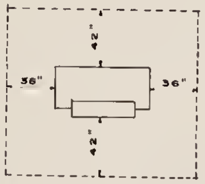
Allow space for the instructor's desk and a chalk and tack board.

Adjoining the drafting space should be a supply room for drafting materials.

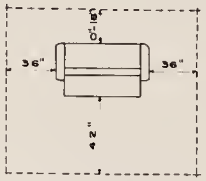
A suggested adjunct facility for vocational training is blueprinting or a similar process. The area required for this facility will be determined by the printing process to be used. Space should include room for the storage of printing paper, as well as for the trimming and assembling of prints.

Natural lighting of the drafting room should be from the north or east. Lighting fixtures should be selected to minimize glare and shadows and should produce a recommended intensity of 200 foot-candles at the work surfaces.

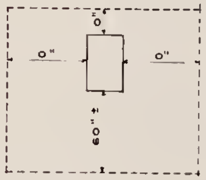




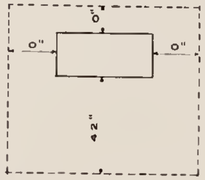
BLUEPRINT MACHINE



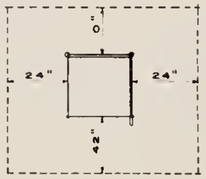
BLACK OR COLORED LINE REPRODUCTION PRINTER



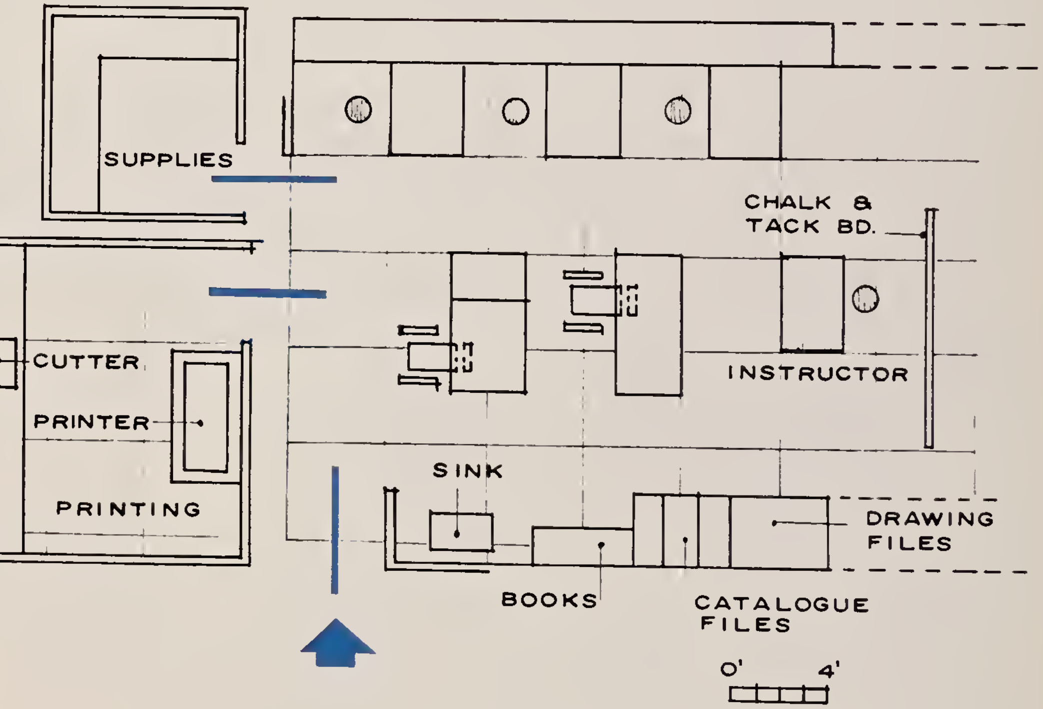
FILE CABINET



BLUEPRINT WASHER



PAPER CUTTER



Watch Repair

This may be too limited in application for inclusion in all centers, but the nature of the occupation makes it adaptable to many disabilities.

Space requirements will be determined primarily by the number of work stations; 12 to 15 are recommended.

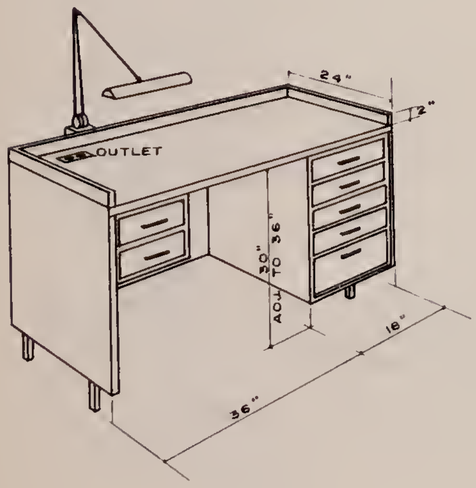
The area around work stations should be planned with adequate space for wheel chair patients.

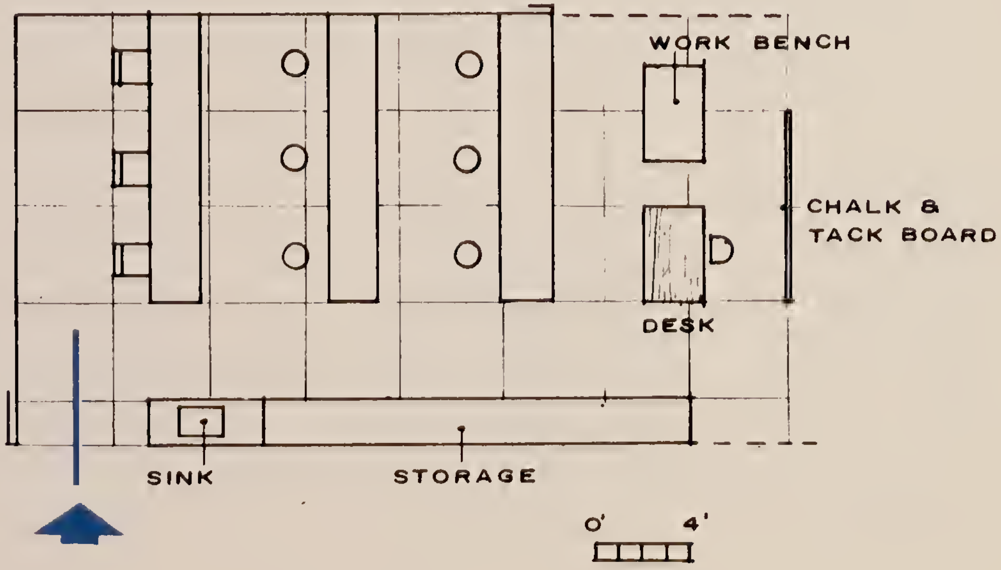
Standard watchmaker's benches may be used by some patients. The bench indicated is designed to be used also by patients in wheel chairs, and may be adjusted in height to accommodate patients with various physical limitations. Each work station should be equipped with a jeweler's lathe and an auxiliary spotlight.

In addition to work stations, space should be provided for storage—consisting of small drawers and shelves a maximum of 2'-0" deep.

Furnish the room with an instructor's desk, chalk board, and tack board. Provide a screen for projecting technical movies and slides. A work bench for general use and demonstration purposes is recommended. For optimum use, the bench should be equipped with a Bunsen burner, electric power outlets, and a metal vise.

Natural lighting from the north or east is recommended. A general illumination level of 100 foot-candles is recommended, with an intensity of 500 foot-candles at work stations.





Shoe Repair

Certain pieces of equipment in shoe repairing will not be suitable for use by patients confined to wheel chairs. Others may be modified to make this possible. Those whose disabilities require the use of crutches may be trained in the operation of all shoe repair equipment.

Twelve to fifteen patients per instructor is a recommended optimum ratio. Each patient should be provided with a work station containing a jack and last.

The area should include basic stationary equipment: work benches with small tools such as a five-in-one machine, sole skiver, leather splitter, and heel remover; rough rounder; two curve stitchers; lock stitcher; two heavy duty sewing machines; and a finisher.

If the area is large enough for two finishers, one may be equipped with a ramp to accommodate wheel chair patients.

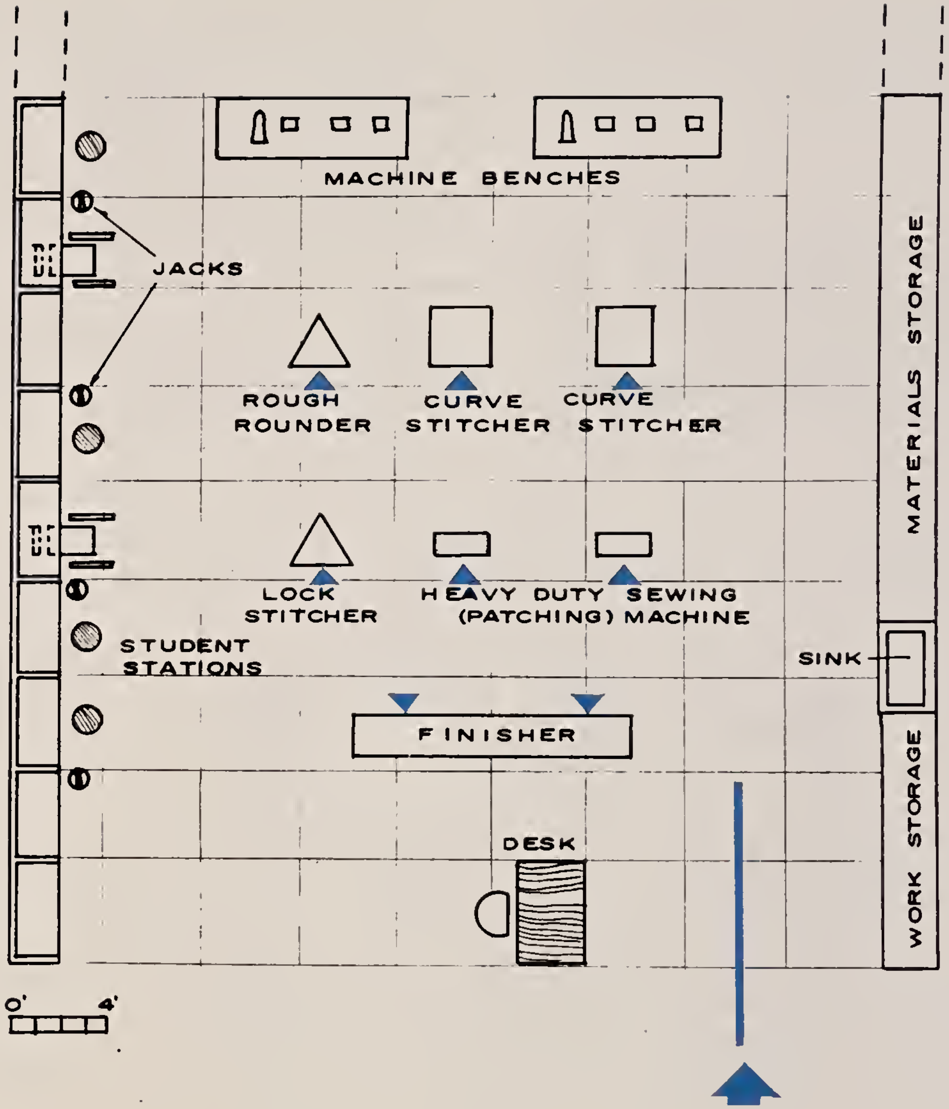
Spacing of equipment and work stations should be arranged to allow for safe circulation of patients in wheel chairs or with crutches.

Within the work area, provide a sink for hand washing.

Locked cabinets are required for shoe repair materials—leather, heels, thread, dye, etc.

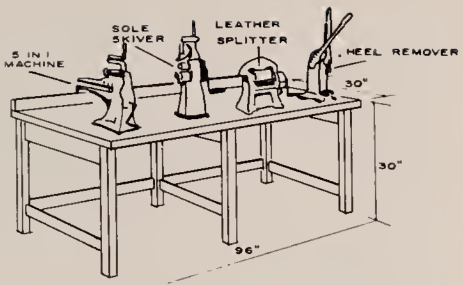
Provide storage for machine parts to be used in the repair of equipment, for individual hand tools, and for shoes.

A desk for the instructor is part of the minimum equipment.

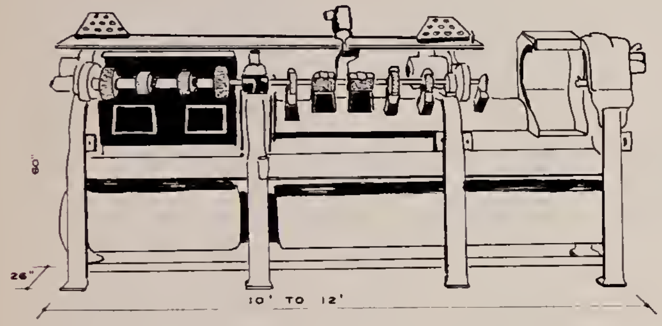


Power-driven equipment may operate on 115 volts, but finishers require 220-volt service. The heavy duty sewing machine is foot-operated.

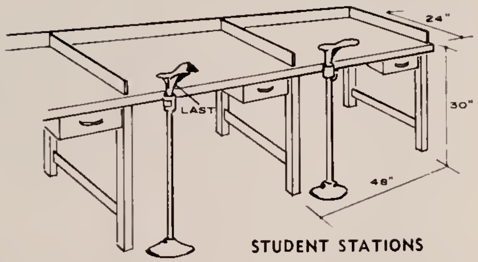
Recommended lighting intensity is 50 foot-candles.



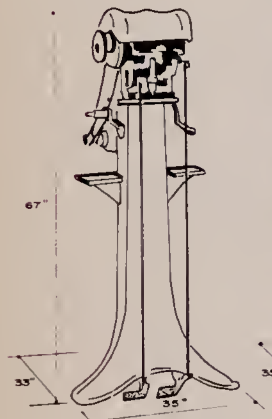
MACHINE BENCH



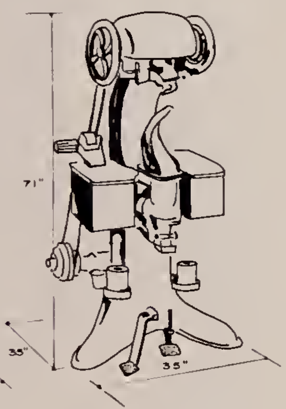
FINISHER



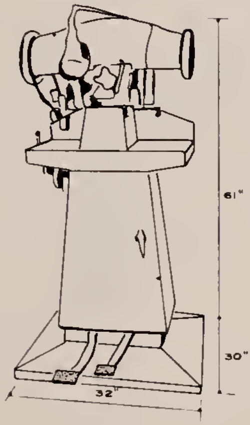
STUDENT STATIONS



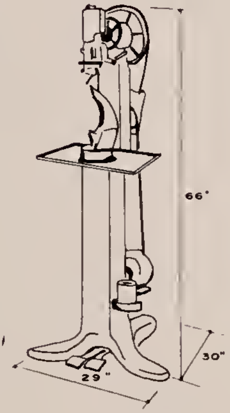
ROUGH ROUNDER



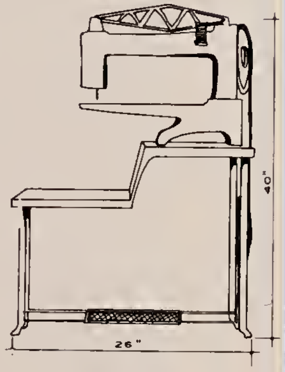
LOCK STITCHER



CURVE STITCHER



CHAIN STITCHER

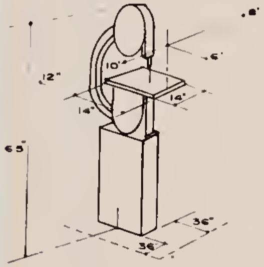


HEAVY DUTY SEWING (PATCHING) MACHINE

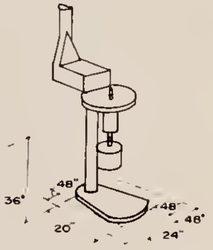
Upholstery and Furniture Repair

Much upholstery work is done from a seated position at work stations. Such tasks may also be performed by wheel chair patients. Other operations, such as the moving of heavy pieces of equipment and the operation of certain woodworking tools, will be restricted to patients with less severe physical limitations. .

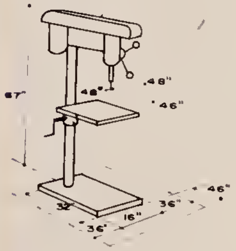
The basic unit for upholstery is the working station. For chair upholstery an area of 7′-0″ x 9′-0″ is desirable (or two chair work stations may be combined for work on sofas). Each work station should have a work counter with electric outlets



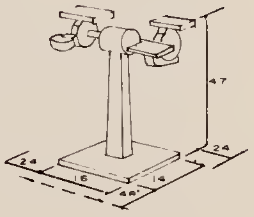
14″ BAND SAW



SPINDLE SANDER



17″ DRILL PRESS



GRINDER

and storage space. A surplus materials bin should be provided to keep the area free of debris. Equip each work station with an elevated work surface; "lazy susan" top is a considerable convenience. Near the turntable a small wagon for tools is recommended.

For every five work stations provide a heavy duty sewing machine, a cutting table 4'-0" wide, a cloth bolt rack, and a sink for hand washing.

Storage space should be provided for additional cloth, webbing, foam rubber, and other materials.

For the repair and refinishing of wood furniture frames, a small woodworking and paint shop is required.

Basic power tools in the woodworking shop include a table saw, band saw, joiner, lathe, drill press, spindle shaper, and buffer-grinder. (Illustrated are examples of some of these tools.) This equipment should be provided with sufficient clearance, adequate power, and all safety devices in accordance with recommended shop practice.

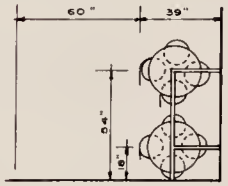
In direct relation to the woodworking shop, provide wood storage and a paint finishing room. The paint room should have adequate mechanical ventilation.

For each patient, a working stock of three pieces of furniture is a required minimum: one in process, one completed and awaiting pickup, and one on reserve. Storage space near a receiving and shipping dock is, therefore, essential.

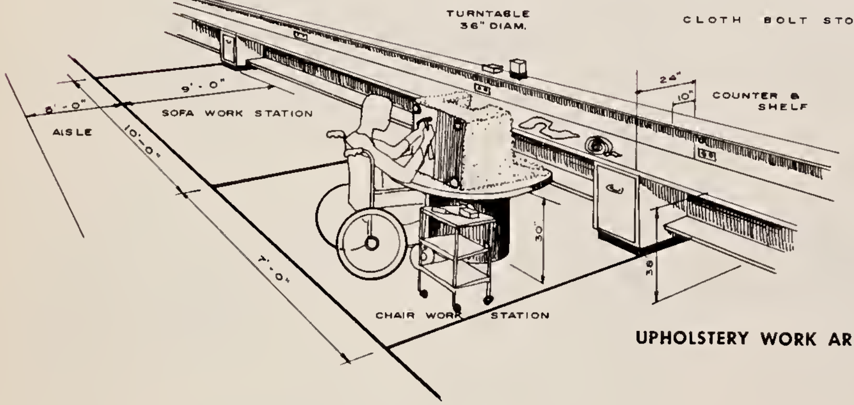
A level of general illumination of 50 foot-candles is recommended in the upholstery and woodworking areas.

Provide a desk for the instructor and in an extensive program an office space enclosed with glass.

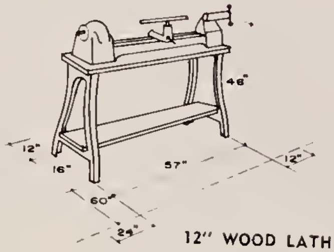
An instructor and one assistant are recommended for an enrollment of 12 to 15 patients.



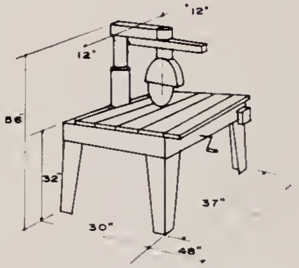
CLOTH BOLT STORAGE



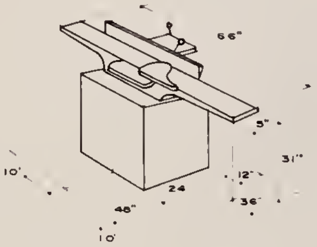
UPHOLSTERY WORK AREA



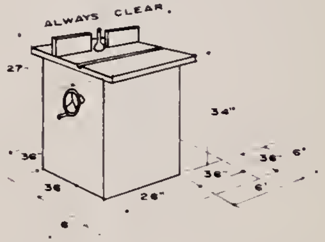
12" WOOD LATHE



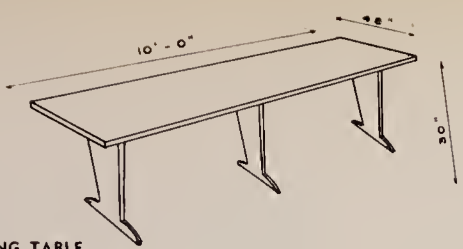
12" RADIAL SAW



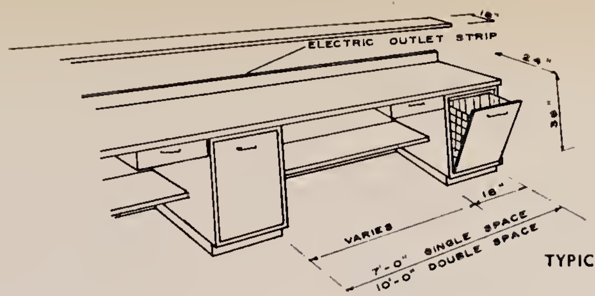
8" JOINTER



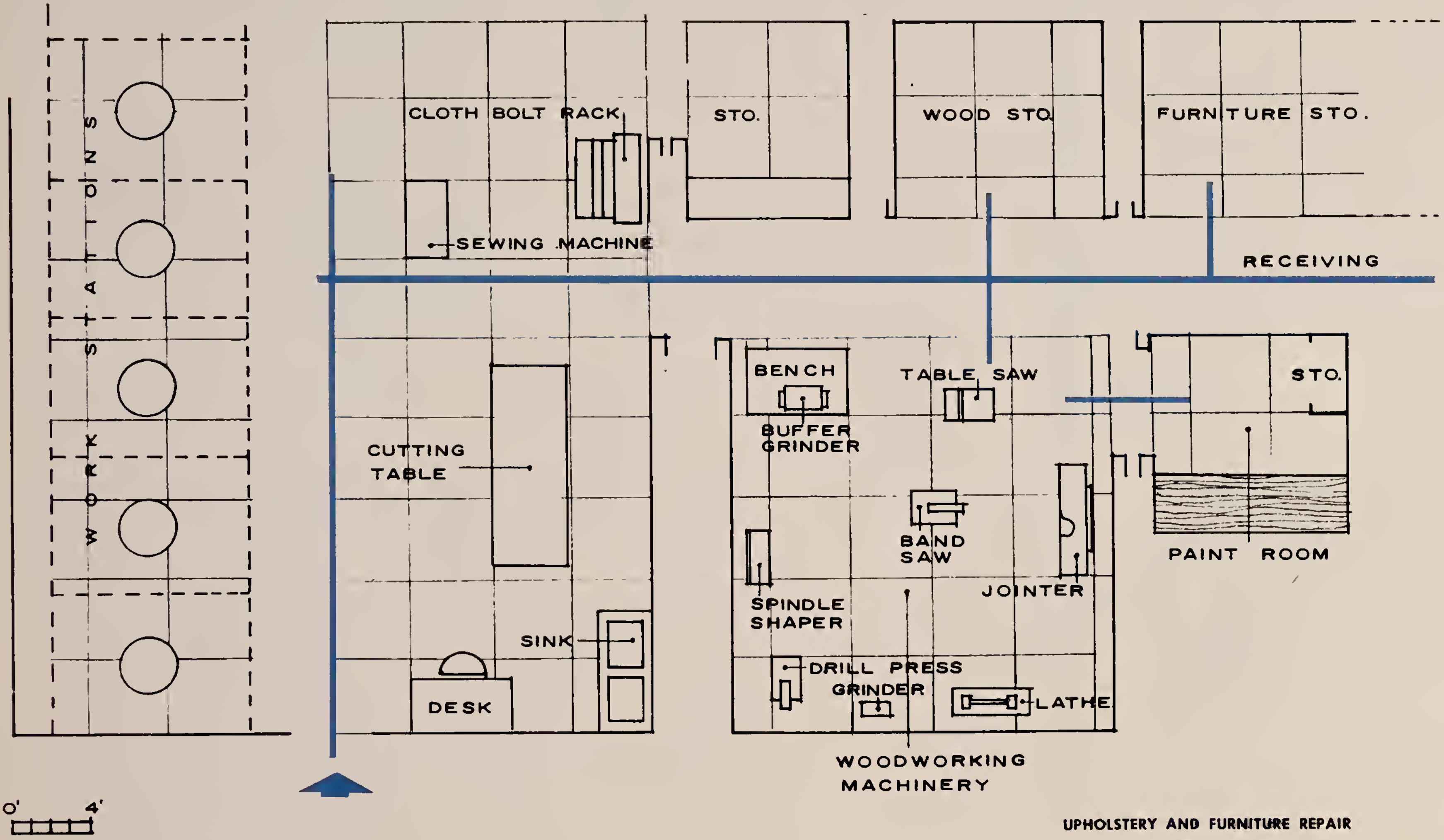
20" WOOD SHAPER



CUTTING TABLE



TYPICAL COUNTER UNIT



UPHOLSTERY AND FURNITURE REPAIR

Machine Shop Operation

A training program in machine shop operation is not intended to develop such advanced skills as are required in tool-making, but may effectively be used to develop competence and assurance in the operation of certain machine tools.

The machines used in a training program should be carefully selected with a view to the type of tools used in industry within the area.

Local industries may find it to their advantage to supply the center with certain pieces of equipment used in their plants.

The machine shop should include a range of basic tools for the following operations:

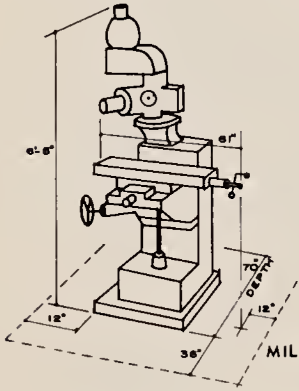
i) drilling;
ii) lathe work (bench and engine type);
iii) milling machine work;
iv) power saw work;
v) shaper work;
vi) punch press work;
vii) grinding work.

Of the several operations, punch press and grinding are the most hazardous. It should be noted that other equipment operates at much slower rates of speed than woodworking and is, therefore, a safer operation.

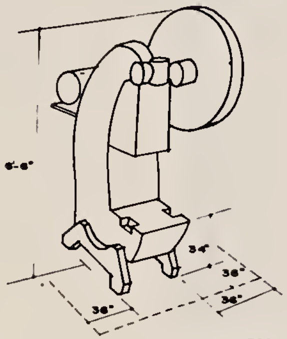
Although machine shop operation is not a program for wheel chair patients, those with crutches may operate tools from seated positions on stools, if necessary. Many physically handicapped persons may be instructed in machine shop operation. For example, a patient with only one arm may efficiently operate all basic tools.

Much of the equipment is heavy and the floors should be designed accordingly. For flexibility in arrangement of tools, overhead power service is recommended. Both single-phase and three-phase circuits will be required.

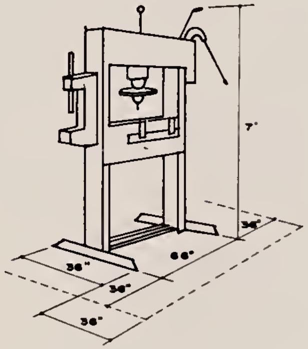
Each piece of equipment requires its own



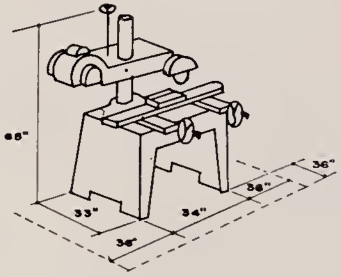
MILLING MACHINE



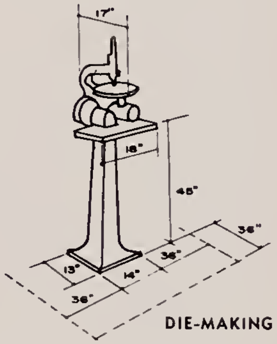
PUNCH PRESS



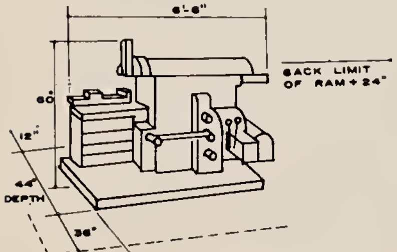
HYDRAULIC PRESS



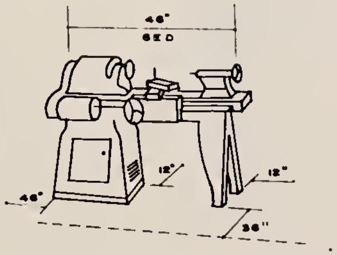
SURFACE GRINDER



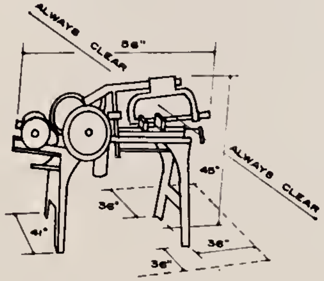
DIE-MAKING MACHINE



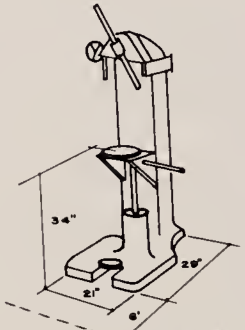
MULTI-PURPOSE CRANK SHAPER



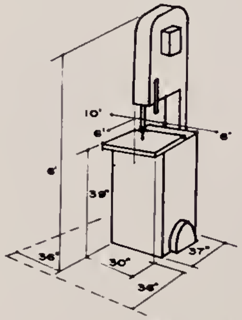
METAL CUTTING LATHE



HACKSAW MACHINE



HYDRAULIC ARBOR PRESS



BAND SAW

work area. This area should be clearly marked on the floor.

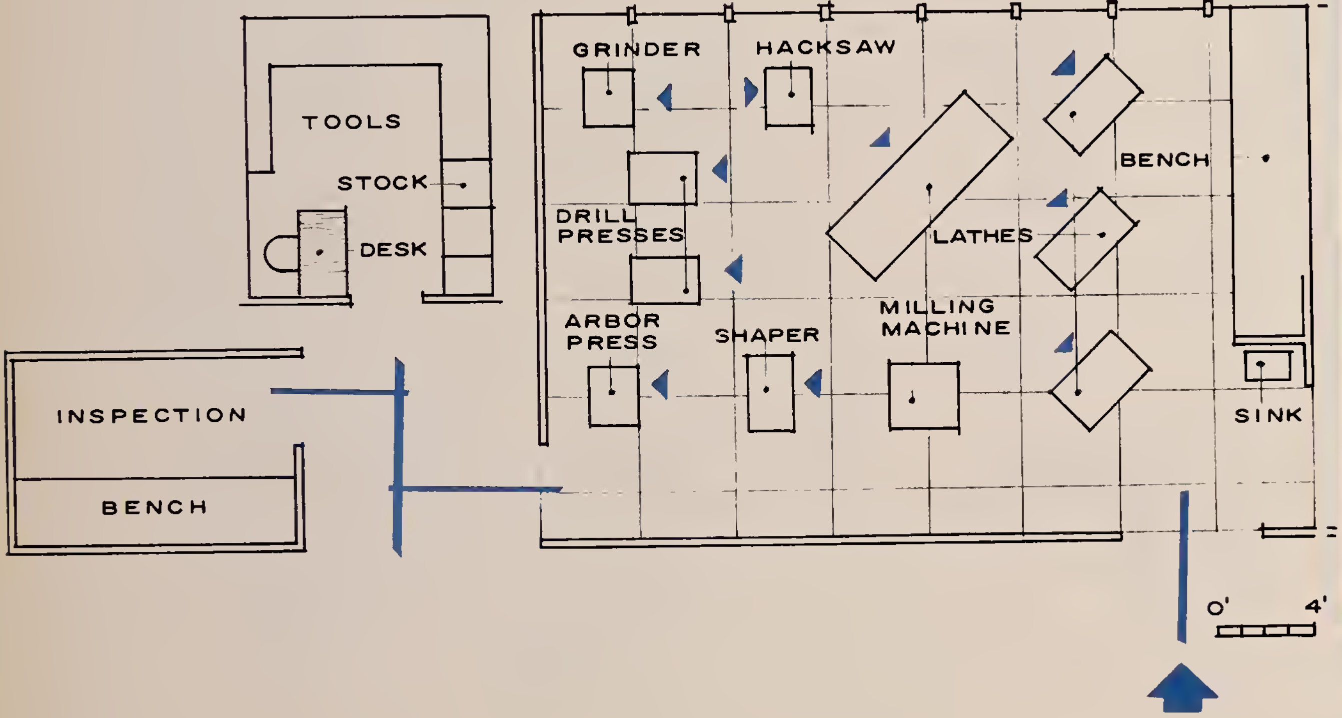
The layout of the equipment and all safety factors should be in accord with procedures observed in shop planning.

Adjoining the shop area, preserve space for small tool storage and supplies.

* * *

An adjunct facility to machine shop operation is inspection work. Most industries require such services, which involve the inspection of incoming material, work in process (either on location or in a lab), and the finished product. Inspection may be highly technical or very simple; however, it frequently requires much less physical ability than machine shop operation. Equipment for inspection requires workbenches with various types of measurement tools and gauges.

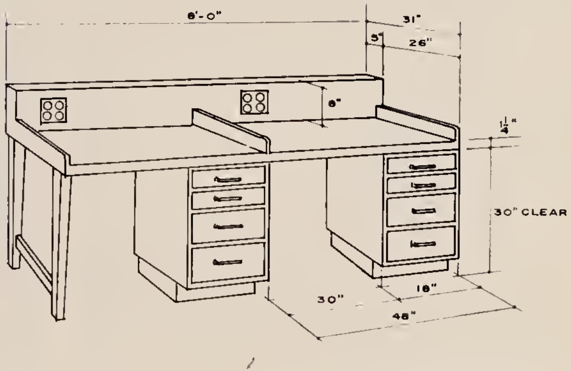
The indicated plan layout merely suggests possible basic equipment. Actual equipment, number of items, make and size, should be selected after consultation with local industry.



Radio, Television, and Appliance Repair

This program offers training in the repair of household appliances, business machines, and equipment related to photography, radio, and television.

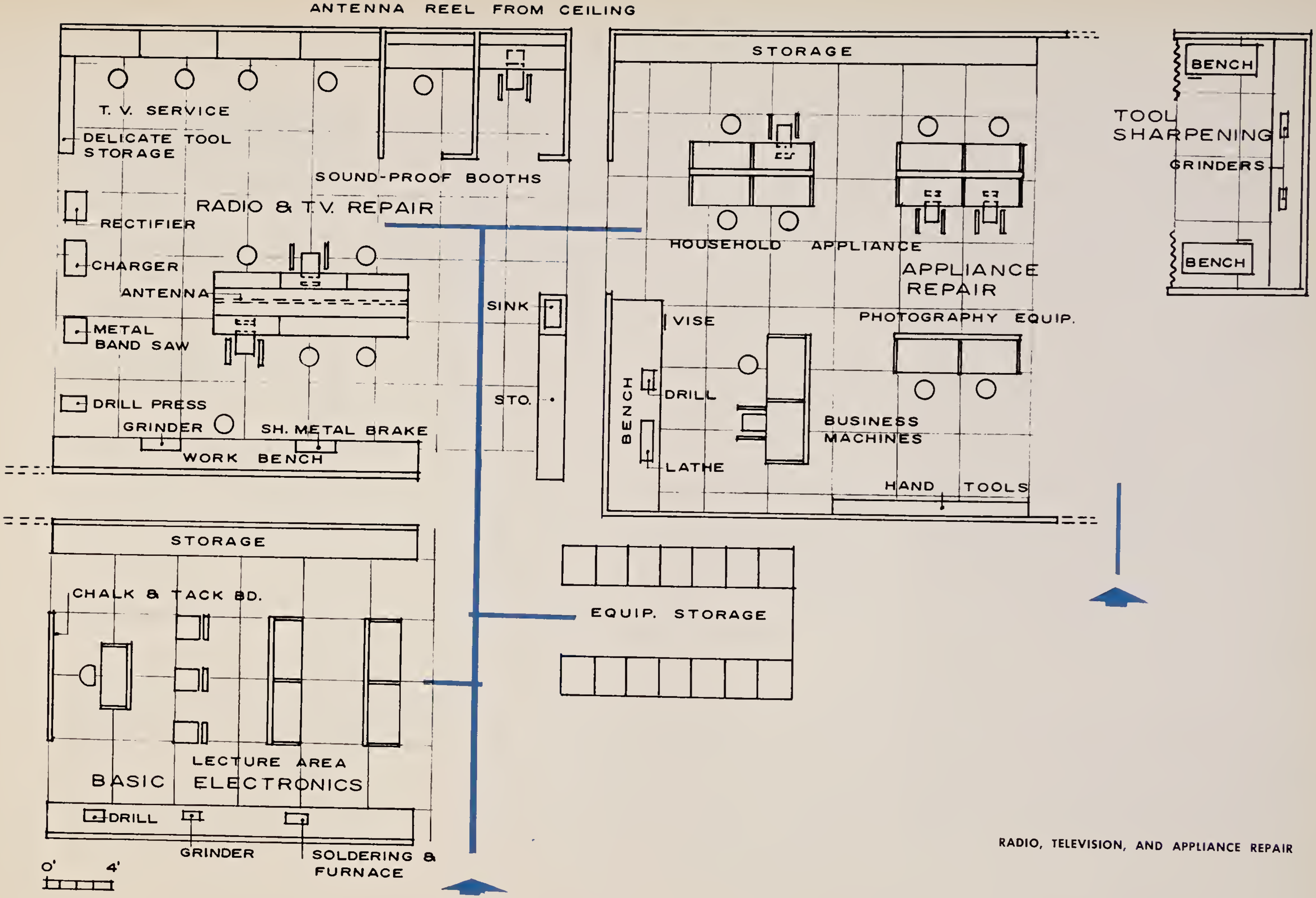
For the repair of household electrical appliances such as irons, toasters, cameras, and projectors, and for office machines such as typewriters, a student work station consists of a bench with kneehole and drawers, hardwood top, and curbs. The back edge of the bench should be furnished with electrical receptacles.



STUDENT WORK STATION
APPLIANCE REPAIR

Provide in the area a workbench with steel angle edges, and equip it with a machinist's vise. Provide also a drill press, bench lathe, and hand tool cabinet.

If the sharpening of such tools as lawn mow-



RADIO, TELEVISION, AND APPLIANCE REPAIR

ers and knives is to be part of appliance repair, equip the area with workbenches, sharpeners, and grinders.

For radio and television equipment repair, an area for instruction in basic electricity is a necessary adjunct. This area should be furnished with student work stations and demonstration bench. Equip desks with electrical outlets and antennas. Provide for storage of demonstration equipment and include a workbench with drill, grinder, and soldering furnace.

The radio and television equipment repair room should be equipped with student work stations, and a workbench with grinder and sheet-metal break. Also provide drill press, metal band saw, charger, and rectifier.

Soundproof booths are recommended for radio and television testing.

Provide separate storage for delicate instruments. Equipment storage may be arranged to serve both the basic electricity area and the repair area.

The equipment and work area should be placed to allow ample circulation for wheel chair patients.

Provide a service entrance for receiving and shipping materials.

A general illumination level of 50 foot-candles with 100 foot-candles at work stations is recommended.

Twelve to fifteen students per instructor is the recommended ratio.

Not all of these suggestions will be applicable to each center. They have been selected because of work available in some areas and because of the diversity of skills and interests required in the training program for these vocations. In a large center, heavily vocationally oriented, the occupations trained for should be great in number and extensive in their arrangement.

1. Commercial:
   accounting, stenography, clerk-typist, general clerical, telephone operator, sales.
2. Academic:
   mathematics, English, economics, business, social training.
3. Arts and Crafts:
   ceramics, jewelry, leather, metal, plastics, weaving, wood.
4. Graphic Arts:
   printing, press operation, typesetting, sign making, bookbinding, silk screen.
5. Music
6. Optics: lens grinding.
7. Automotive:
   engines, electrical, body and fender repair.
8. Farm Mechanics
9. General Mechanics or Fix-it Shop

10. Building Trades:
    carpentry, plumbing, painting, masonry, electrical, heating.
11. Woodworking
12. Machine Shop Operation
13. Drafting
14. Electronics:
    light assembly, radio and television, appliance repair.
15. Industrial:
    packing, power stapling.
16. Clothing:
    sewing (home and industrial), tailoring, millinery, laundry.
17. Upholstery:
    furniture refinishing and repair.
18. Watch Repair
19. Barbering and Cosmetology
20. Shoe Repair and Orthopedic Shoe Work
21. Nurse's Aide
22. Custodian
23. Food Server
24. Kitchen Helper

Additional vocational training areas and further information can be obtained from vocational education departments in state departments of education. Selection of those areas included in the rehabilitation center must be based upon community needs and the center's program.

Location Within Building

Vocational training uses source material from all other departments to determine a specific program. It works particularly closely with the vocational evaluation unit.

As certain vocational training activities are noisy, this department should be away from quiet zones.

Place this department near service areas with convenient receiving and shipping facilities.

Staff-Patient Ratios

A maximum staff-patient ratio in the vocational training area is approximately one instructor to 15 patients. Initial training stages may require the supervisor's individual attention, comparable to tutoring. Unlike the usual school situation, this area has no set term or semester, but is always in operation. In this way a patient may start whenever he is ready and stay with the vocational area until he is ready to go into the prescribed line of work. At the end of the training period, the patient will spend the same number of hours a day and days per week at his work as will be required by the job he will fill upon completion of his rehabilitation.

Organization of Space

A large uninterrupted space, comparable to industrial concerns, will best fit the needs of the vocational training area. Flexibility of space is necessary because the types of training will change, the demands for trained patients will vary, and the number of patients training in a given area will, of course, be different from time to time. Space which is arranged for a variety of uses, and furnished with movable storage walls or light partitions, will give maximum flexibility to this area. Each separate training area should be self-contained and separate from others.

The lighting, heating, and ventilation of this space will require special consideration. Varying levels of illumination are necessary (see foot-candle chart, Section IV). Adequate outlets for heavy duty equipment as well as standard equipment must be provided. Flexible light fixtures should be considered. In fulfilling the heating requirements it should be remembered that this space, unlike the rest of the center, serves people in work clothes, working in groups. The ventilation will have to take care of extracting the dust and fumes from the several work areas and provide good circulation of clean air for all the areas.

Adequate locker space is essential in the training area.

Provide safety devices at all power equipment, and take all necessary precautions for the safety of the patients and staff who use this area.

Storage

Good storage in all parts of the center is important, but in this area it is particularly significant. It adds to the safety of the program, its scope, and its flexibility. In addition to good general bulk storage for surplus stock not immediately needed, each training area should have storage for day-to-day needs.

3. SHELTERED WORKSHOP

The sheltered workshop provides additional opportunities for further evaluation, training, and eventual employment of the handicapped individual. The sheltered workshop was once thought of as a place for terminal employment of those who could not benefit from further training. Today this concept has changed, and it is established as one of the steps in the rehabilitation process. There will, perhaps, always be some patients who, because of extensive or complicated disabilities, require the environment of the sheltered workshop as the only means of permanent employment.

The sheltered workshop is never an isolated unit in terms of program, but is part of the total vocational area which in turn is an integral part of the center. For selected patients, it is the best means of developing work tolerance, work habits, confidence, and skill. It also provides a means for the development of industrial quantity standards. The added incentive of pay for work done is often the motivation needed to help the disabled person carry through his rehabilitation program. This work is most frequently secured from industry or other sources on sub-contract basis.

This work must be done within the most businesslike atmosphere and framework, yet without undue pressures of time; however, it must meet the standards of quality and guarantee delivery of the required quantities on time schedules. It must provide payment for services rendered and rewards in terms of individual growth and development.

Location Within Building

The sheltered workshop should be conveniently related to the other areas of vocational services. It may be a detached or semidetached unit with a separate patient entrance, as patients engaged in the shop usually work an eight-hour-day program and no longer require the intensive services of the medical department.

Depending upon its closeness to the medical department of the center, the shop may require a first-aid room. In the larger workshop a full-time nurse may be required.

As work within the shop may be noisy, separation from quiet areas in the center is recommended.

For delivery and shipment of goods, it is essential that the unit be adjacent to a loading area.

Organization of Space

This area will closely resemble industrial space and will house industrial operations. The heating, ventilating, and dust collection systems will need to be planned accordingly, with floors designed for adequate loads and an electrical system to meet many different kinds of demands.

The type of work carried out in the shop will be subject to frequent change. Flexibility in organizing the space is, therefore, essential: the area should have a high ceiling and be free of columns. Floors should be designed to take heavy loads of equipment and stacked materials. Much of the work under contract in the shop will be of an assembly line nature. However, the products may merely require work surfaces for their assembly or they may require special equipment (frequently supplied to the center by the contracting firm if it is for a particular job). In laying out equipment in the shop, it is advisable to obtain expert industrial advice in order to assure efficient flow patterns and simplified handling and storage of materials and products.

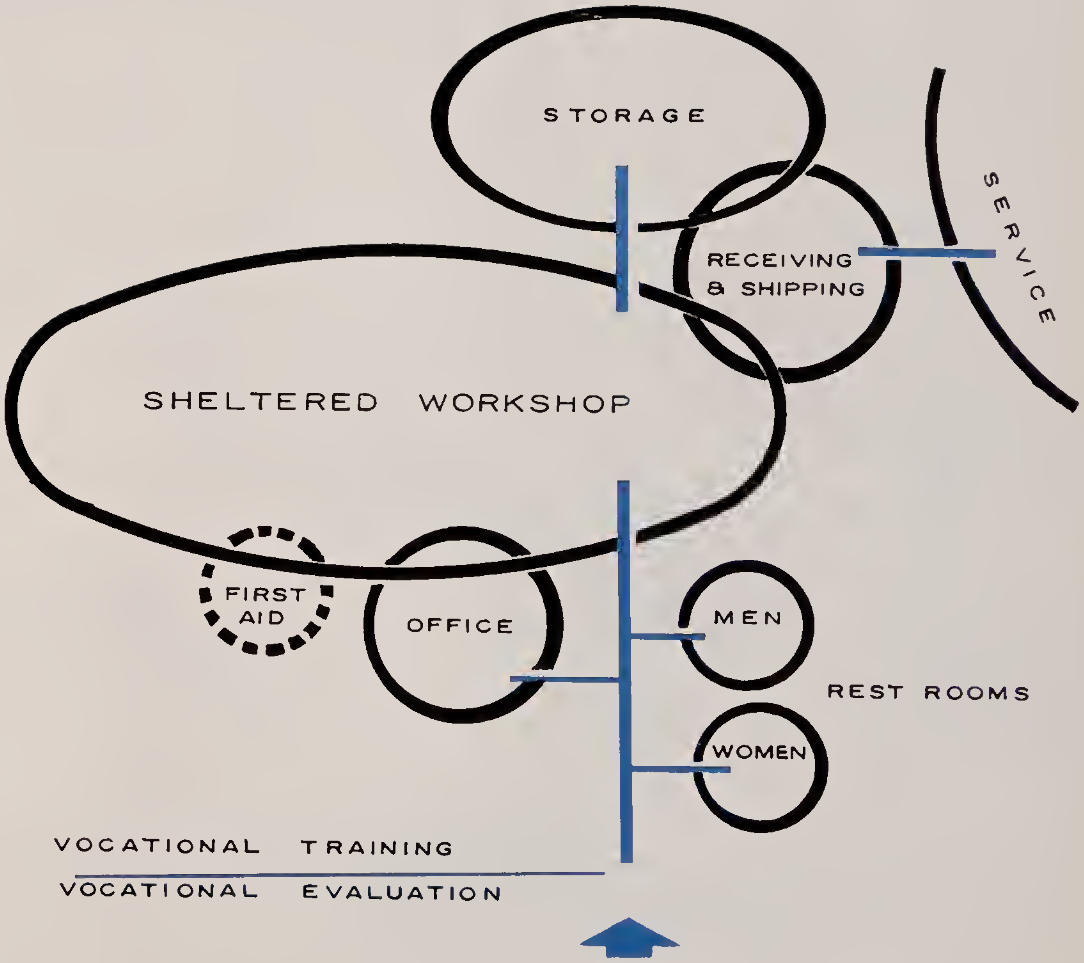
Some work surfaces should be adjustable in height and all should be designed for the use of wheel chair patients.

Electrical power outlets should be frequently spotted along bench walls and/or the ceiling grid. Floor outlets for power tool use in the central area of the shop are recommended. Wiring should be sized to take a varying power demand.

Adequate general illumination should be provided with increased intensity at work stations as dictated by the task.

A time clock for the patients' use is sometimes provided in the workshop to encourage punctuality and to determine the patients' production rate.

All necessary safety precautions should be taken to protect the patient from power tool hazards, fire hazards, falls, and other mishaps. A potential hazard exists when there is insufficient space for the storage of materials and products. Ample storage space should be provided for the orderly, safe arrangement of bulky items. A



sprinkler system installed in the shop will reduce fire risk.

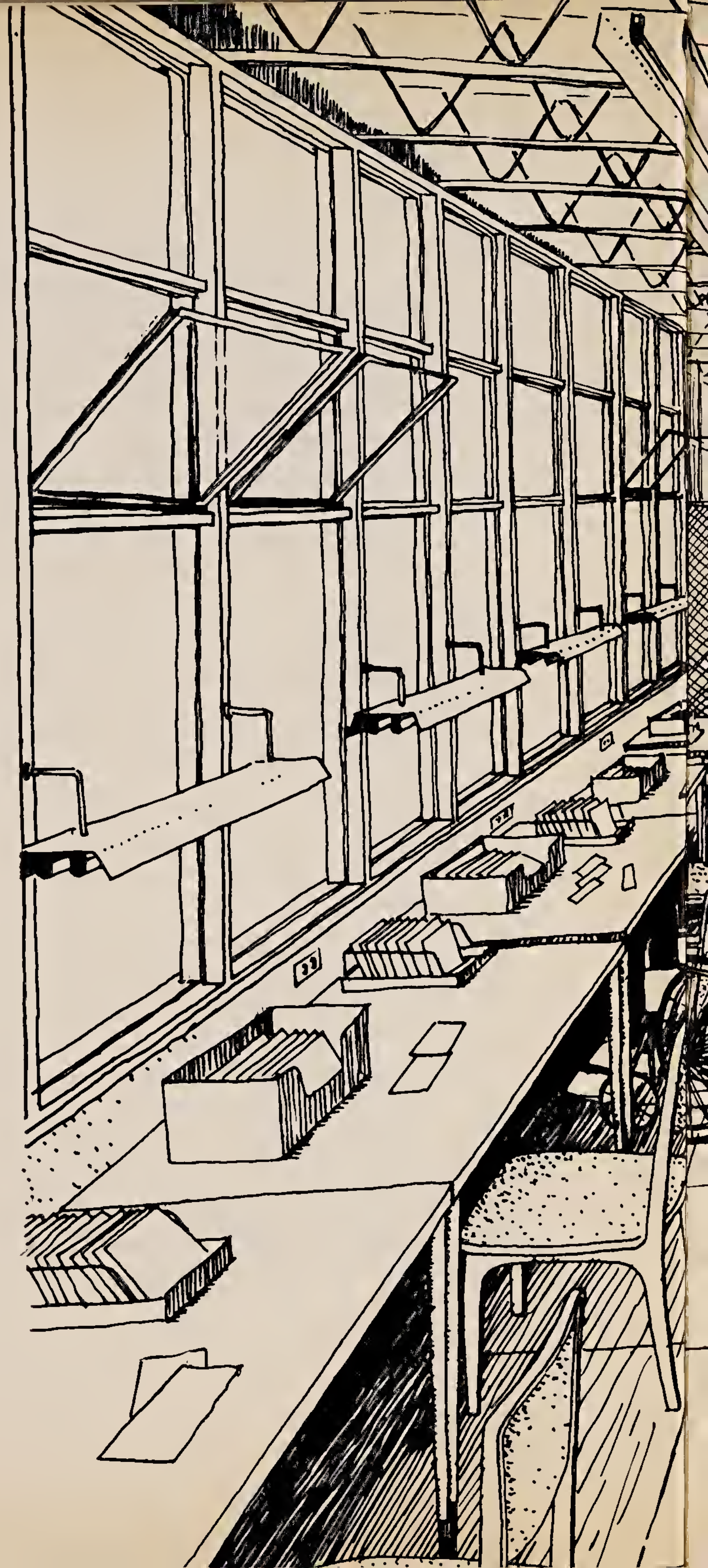
Storage is a major problem and is related to the volume of items handled. The space for storage will vary from 15 per cent to 50 per cent of the work area.

Receiving, shipping, and handling of bulk items requires additional space. This space should be related to a loading dock and truck service area. The service area should be planned so that it does not interfere with other vehicular or pedestrian circulation.

As patients working in the shop will usually work an eight-hour day, facilities for their comfort should not be overlooked. If the center has no dining facilities, a lunchroom convenient to the shop is recommended, as some patients will bring their lunches with them. Provision of a cafeteria is also considered a desirable facility where the number of patients warrants it.

Most states have specific requirements for rest areas for men and women. These requirements should be checked carefully before planning lounges, toilet facilities, and lockers for the patients in the workshop.

A small office for the workshop supervisor should be provided, and so designed that there is maximum supervision of the shop activity from the office. Additional office space will be required for records, cost accounting, and estimating. The size of this area will be determined essentially by the volume of work and number of contracts handled by the workshop.



SHELTERED WORKSHOP

D. IN-PATIENTS

Three types of in-patient units may be considered for rehabilitation centers: nursing, non-nursing, and children's units. Not all centers will have in-patient facilities nor will they necessarily provide all three types of in-patient care.

Patients are usually resident in a rehabilitation center for one or a combination of the following reasons:

i) daily commuting is not possible due to the remoteness of the patient's home;

ii) the design of the home creates physical barriers for the disabled, such as those using wheel chairs;

iii) adequate housing near the center is not obtainable;

iv) there are social problems in the patient's home environment;

v) the patient is unable to cope with the problems of self-care;

vi) the patient has a low physical tolerance level;

vii) there is a need to control the social life and habits of the patient.

General Considerations

In-patient units, where the three types are physically separate within the center, offer the greatest advantages in patient management, but they are not always practical. Smaller in-patient centers, for example, may not be able to provide the larger number of beds necessary for economical operation of each unit on a separate basis.

An alternative to the separate unit plan is a single but multi-purpose in-patient unit that can provide nursing and non-nursing beds and, if required, accommodation for children. It is of particular importance in this type of in-patient unit to have greater flexibility in the use of beds due to constantly changing ratios between men, women, and children in residence, and the changing requirements of each group for nursing services, non-nursing accommodation, and supervised care for children.

Supporting facilities should be arranged so as to be used in common by nursing and non-nursing patients, and to some extent by out-patients. Some of these supporting facilities are the lounge, library, personal laundry room, table games room, television room, and canteen. In the larger units it may be advisable to provide smaller lounges within the nursing and non-nursing units.

If a children's unit is provided, a separate television room, lounge, play area, and library should be considered, in addition to a separate area within the main dining room or a dining room in the children's unit.

The place where in-patients will receive visitors must be planned so as to control the circulation of visitors within the building; and, if possible, to minimize the distance to be traveled. There are several possibilities as to where visitors may be received. One plan, for example, is to have all patients not confined to bed receive their visitors in the general lounge. Only those patients who are confined to bed or to the nursing unit may receive visitors in their room, or in the smaller lounge which may be provided in the nursing unit.

In-patient units must incorporate many specially designed facilities. This may seem on the surface to be in contradiction to the principle of training disabled individuals to occupy standard housing accommodations in the community. In-patient units, however, must be designed to meet the limitations experienced by persons with severe physical handicaps. Some of these individuals following a period of training will be able ultimately to get along without specially designed facilities. Others will have a severe residual handicap which will require certain modifications in the home to continue the elimination or minimization of self-care assistance following discharge from the center.

A self-care training unit incorporating standard facilities must be available in the center for the training of those individuals who will not ultimately require special facilities in the home.

Staff-Patient Ratios

No ratios are suggested, as the staffing pattern for nursing, non-nursing, and children's unit can vary considerably with the type of patient admitted, the extent of involvement, the amount of definitive nursing care required, the amount of self-care assistance and training required, etc.

Nursing beds will require staffing on a 24-hour basis. The staff will generally include registered nurses, orderlies, and nurses' aides.

Non-nursing beds will require a limited staff which may include a resident supervisor or matron, and aides to provide a housekeeping service for the rooms. A signaling system, which is wired to each non-nursing bed and which is incorporated into the call system in the nursing unit, makes it possible to use the staff in the nursing unit for emergencies which may occur in the non-nursing unit, particularly during the night.

Children's beds will require staffing on a 24-hour basis. Usually "house mothers" are required, who may be, but are not necessarily, registered nurses.

Organization of Space

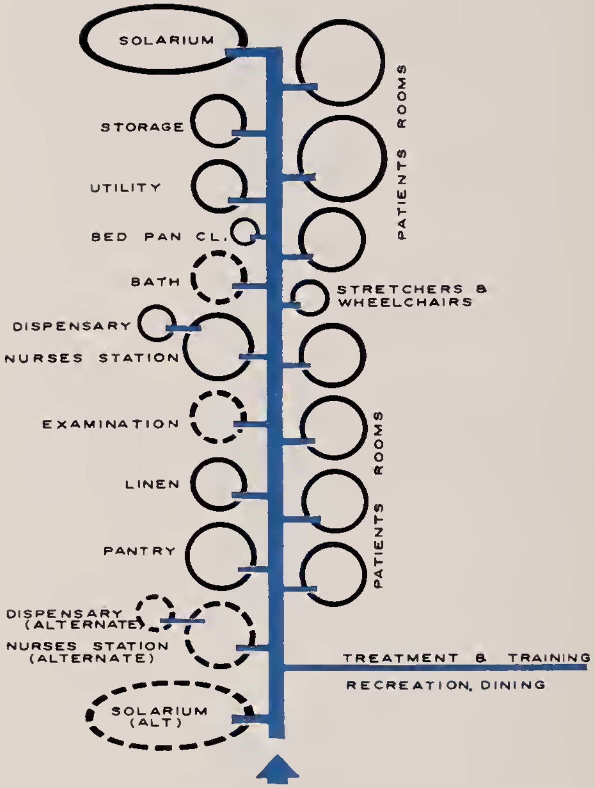
NURSING UNIT

The main purpose of a rehabilitation nursing unit is to provide assistance and training in self-care. The responsibility for this training may be shared with other departments, particularly the occupational therapy department.

Definitive nursing care may be provided also in treating genito-urinary conditions, pressure sores, colds, and other conditions not requiring the level of service available in an acute hospital. In addition to bedrooms, toilets, and baths for patients, the nursing unit should provide the minimum of a nurses' station, dispensary, a doctor's examining room which may double as a treatment room, a pantry which should include a hotplate or range and refrigerator, a storage room for clean and dirty linen, staff toilet units, open or closed storage space for stretchers and wheel chairs, general storage room, bedpan closet and disposal unit, utility room, and solarium. Other areas which are related to the nursing unit are referred to under "General Considerations."

Two opposing views exist regarding the location of the nurses' station. One places it centrally within the unit, the other at the entrance to the nursing unit so that maximum supervision can be maintained over traffic. It is possible to plan the unit so that both conditions are satisfied.

A solarium functions as a social room and may be used as a dining area for patients not confined to bed but not ready to use the main dining room.



NON-NURSING UNIT

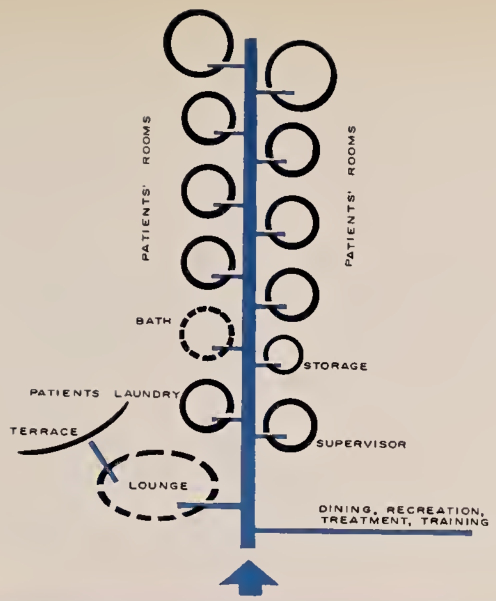
This unit accommodates patients not requiring self-care assistance. Housekeeping services are usually provided, as well as a supervisor or matron who may reside in the unit.

Other areas related to the non-nursing unit are referred to under "General Considerations."[4]

A small laundry with automatic washer, dryer, and ironing facilities for patients to attend to their clothing should be provided. The laundry room should be easily accessible to patients in this unit; and, if possible, to those in the nursing unit.

A general storage room should be provided, and clean and dirty linen storage rooms are optional.

The non-nursing unit should be convenient to the outdoor recreation area, and to facilities in the building such as dining room, social and recreation areas, and treatment and training areas.

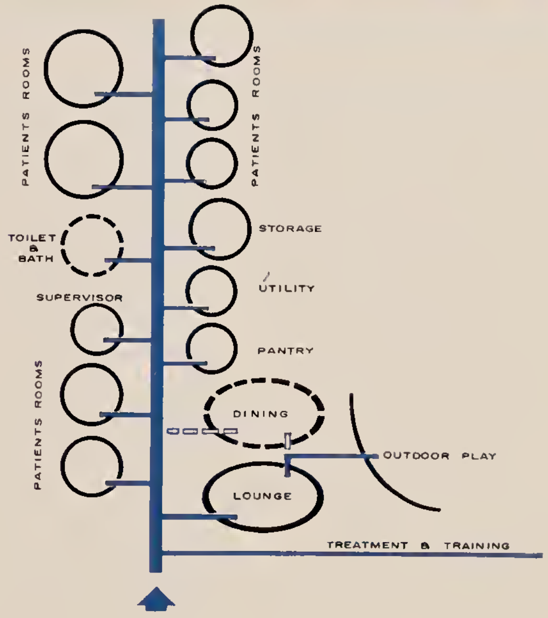


CHILDREN'S UNIT

This unit makes it possible to separate the children from the adults resident in the center, and it should provide 24-hour supervision. Children who require definitive nursing care may be admitted to the nursing wing.

In addition to the bedroom, toilets, and baths, this unit should include a station for the supervisory staff, play area, dining area, visitors' room, general storage room, utility room, and a pantry equipped with a range and refrigerator.

The children's unit should be accessible from the children's treatment and training unit in the center, with consideration given to the problem of traffic control of visitors. This unit should have ready access to a children's outside recreation area, which should be fenced in to minimize the problem of supervision.



Bedrooms

Single rooms are the least economical, but give maximum flexibility in occupying beds. From the point of view of rehabilitation, single rooms are usually not desirable. Wards are the most economical but are the least flexible and create difficulty, for example, in adjusting the use of beds between men and women. A compromise is usually followed. In nursing and non-nursing units, two- and four-bed rooms are in common use, with some private rooms available in the nursing unit. Six-bed rooms are recommended only for children.

Bedrooms should be equipped with dressers, night tables, writing and work tables, and sidechairs or armchairs depending on the number of ambulatory patients occupying the room.

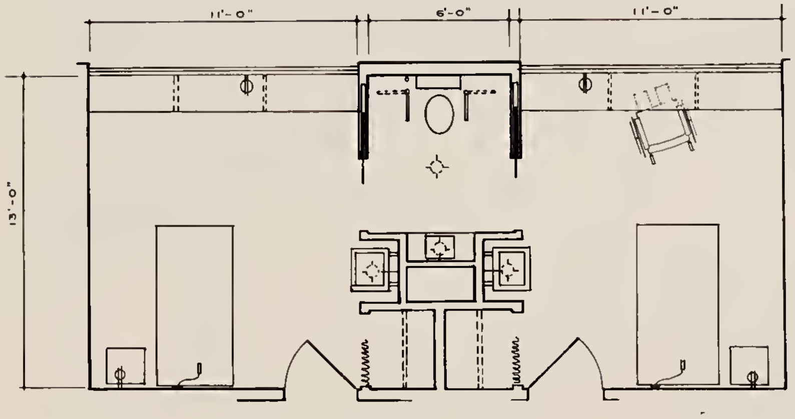
Beds of adjustable height with gatch springs are recommended for the nursing unit. Such a bed can be raised to an appropriate height for nursing bed care and lowered to the seat height of a wheel chair for those patients who are getting in and out of bed. The need for this kind of bed is less important in the non-nursing unit. If they are not provided, the beds in use should have a permanent height corresponding to the seat height of a wheel chair.

Beds in the nursing and non-nursing units should not have castors. In their place should be rubber pads which stabilize the bed. Beds should be selected that permit the installation of various self-help devices which will sometimes be required in order that patients can assist themselves while in bed and get in and out of bed.

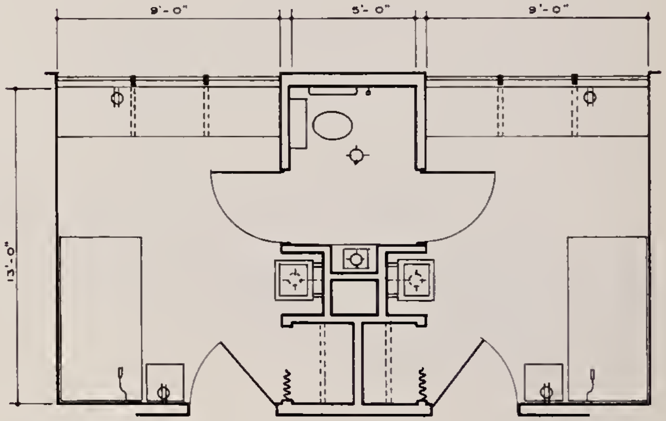
Rooms and beds should be designed for patients using wheel chairs; this will also be very convenient for ambulatory patients. The plans shown indicate desirable dimensions, allowing space on both sides of the bed, for example, for wheel chairs.

In the nursing unit, doors should be 46″ wide; and in the non-nursing unit, 36″ wide. It is advisable, however, with the 36″ door, to have a separate hinged section 10″ wide which may be opened when the use of stretchers or the transfer of beds is required.

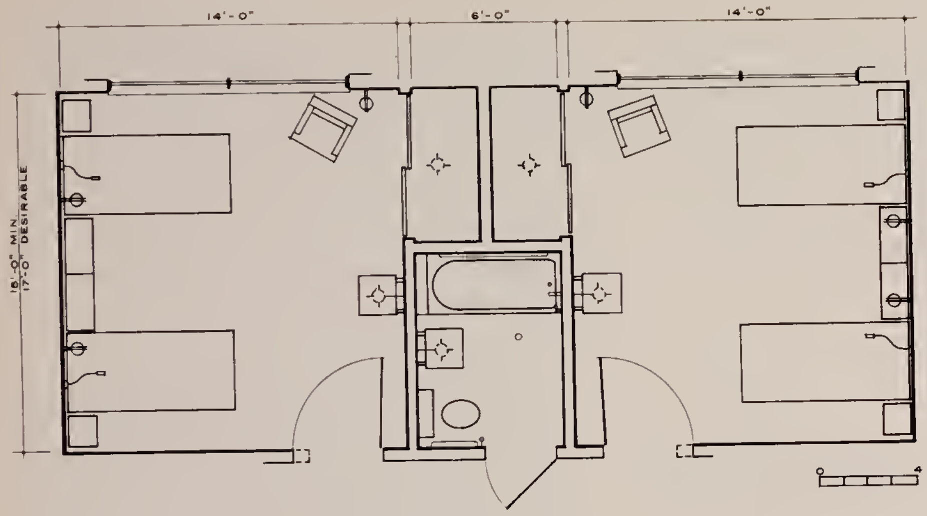
Ceiling lights are not recommended. Rather, indirect lighting above the head of the bed should be used. A reading light which may be incorporated into the indirect lighting unit mounted on the wall at the head of the bed, providing 30 foot-candles, is a practical arrangement. Supplementary reading lights are required for ambulatory patients who may be using sidechairs or armchairs, and for the writing and work tables.



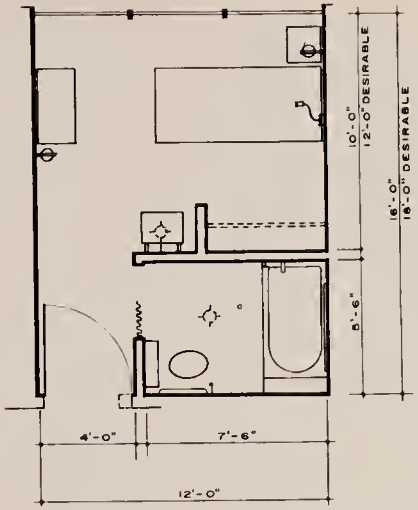
SINGLE-BED ROOM WITH SEMIPRIVATE BATH (DESIRABLE)



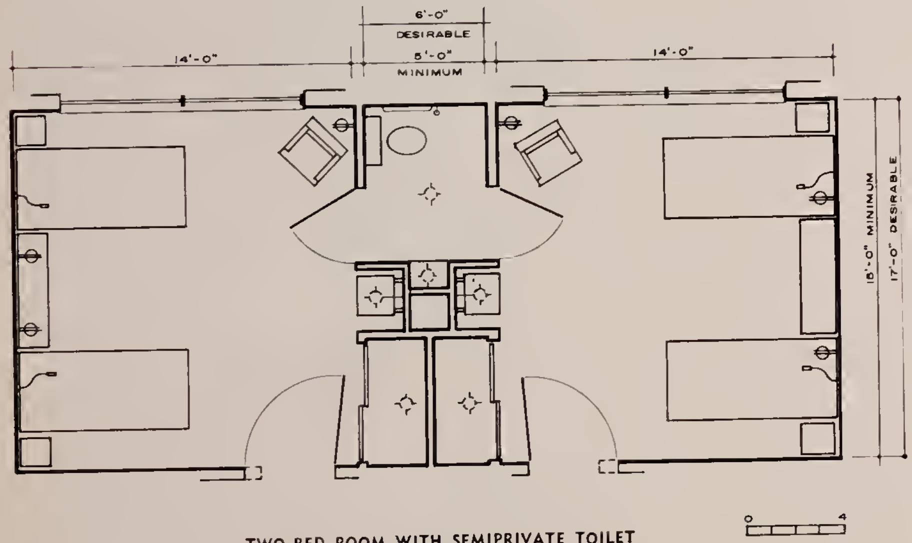
SINGLE-BED ROOM WITH SEMIPRIVATE BATH (MINIMUM)



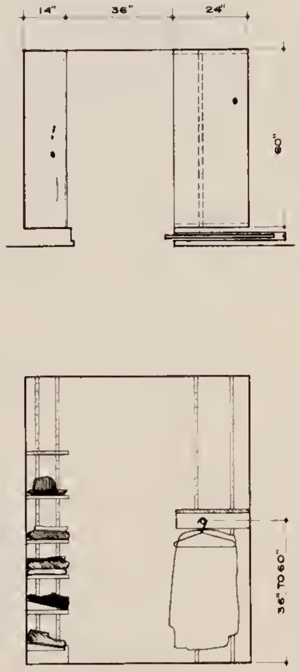
TWO-BED ROOM WITH BATH ACCESS FROM CORRIDOR



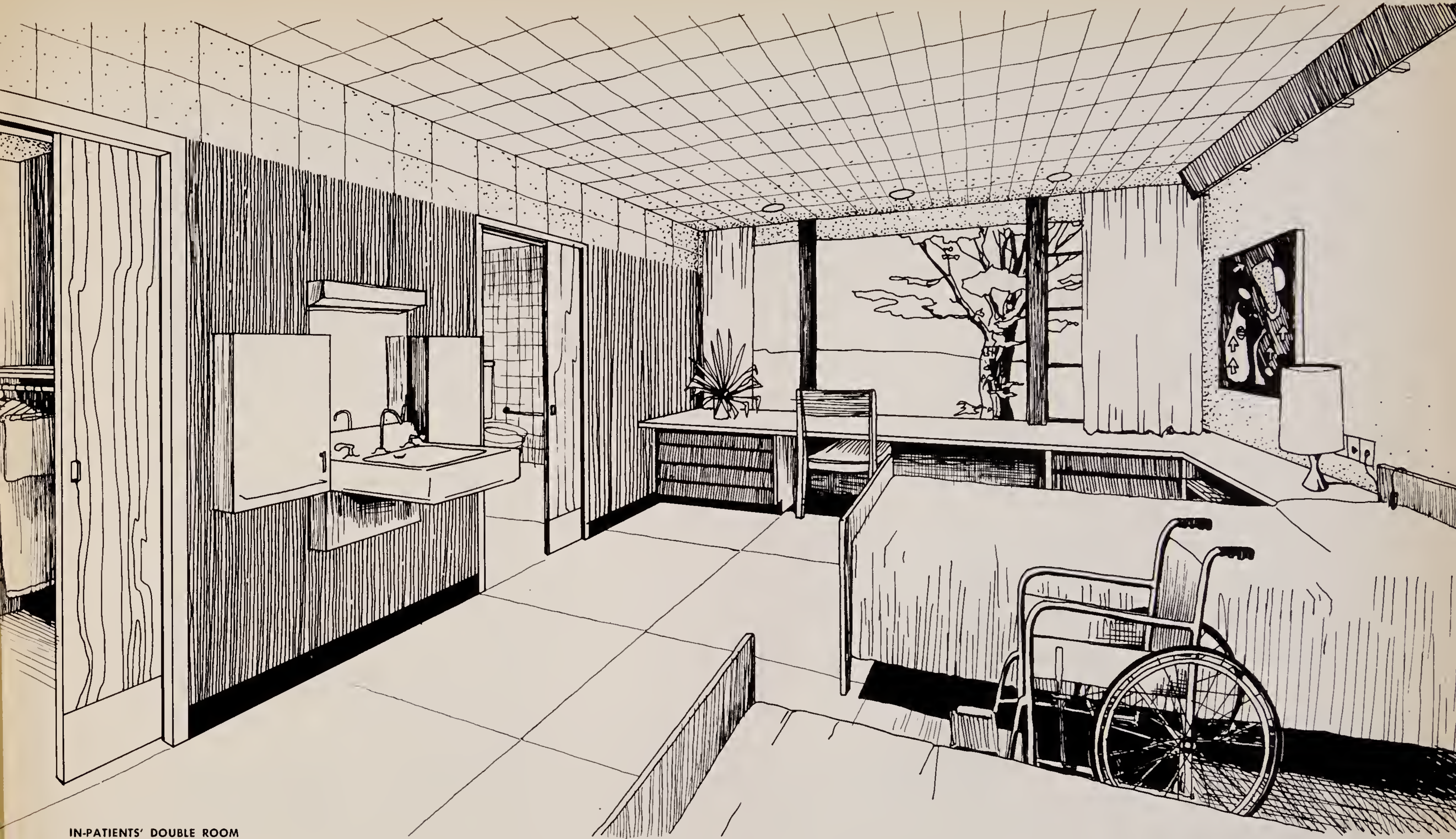
SINGLE-BED ROOM WITH COMPLETE BATH



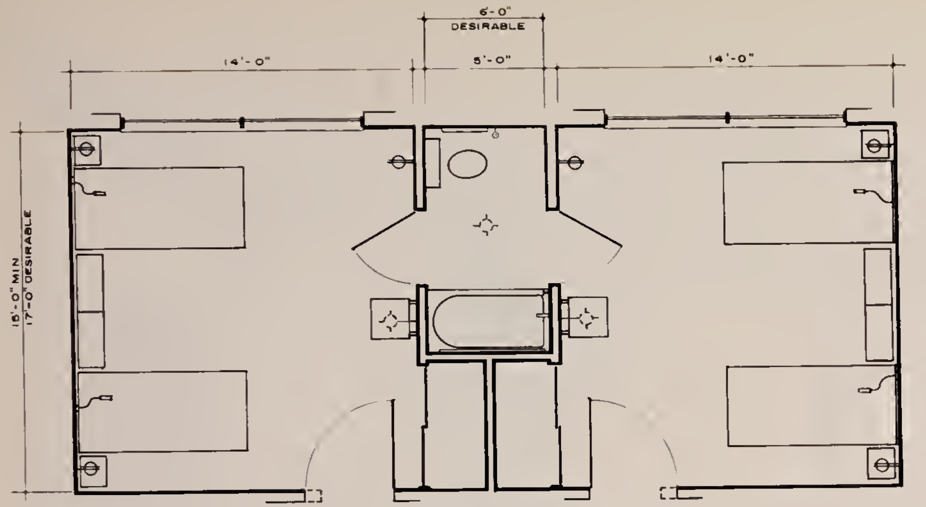
TWO-BED ROOM WITH SEMIPRIVATE TOILET



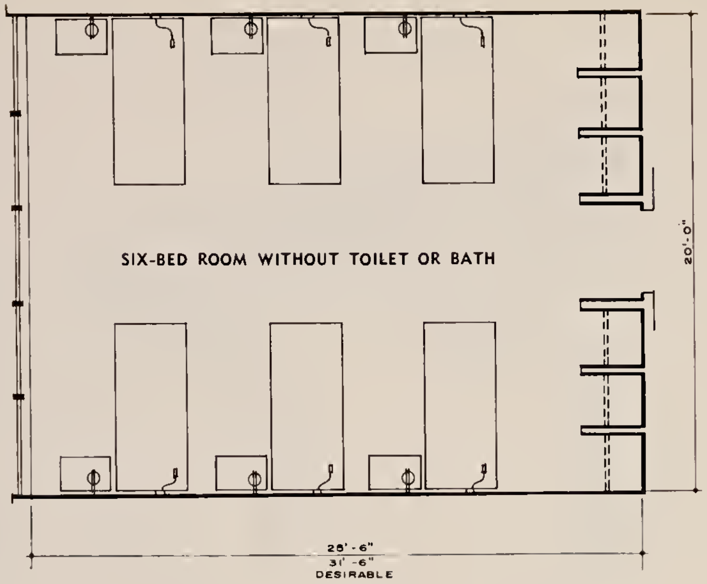
IN-PATIENT'S CLOSET

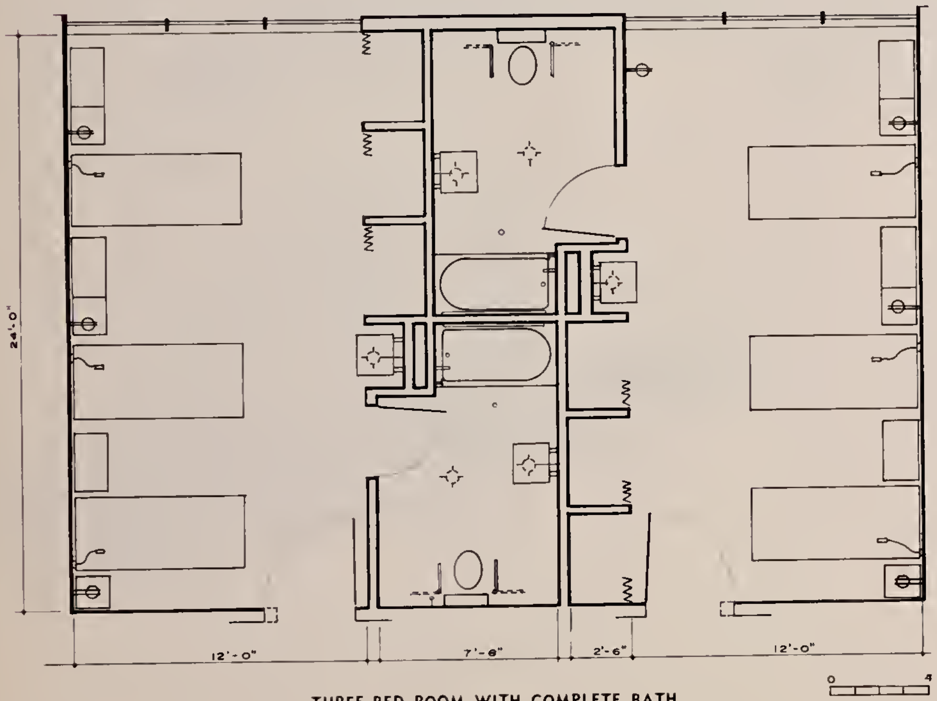


IN-PATIENTS' DOUBLE ROOM

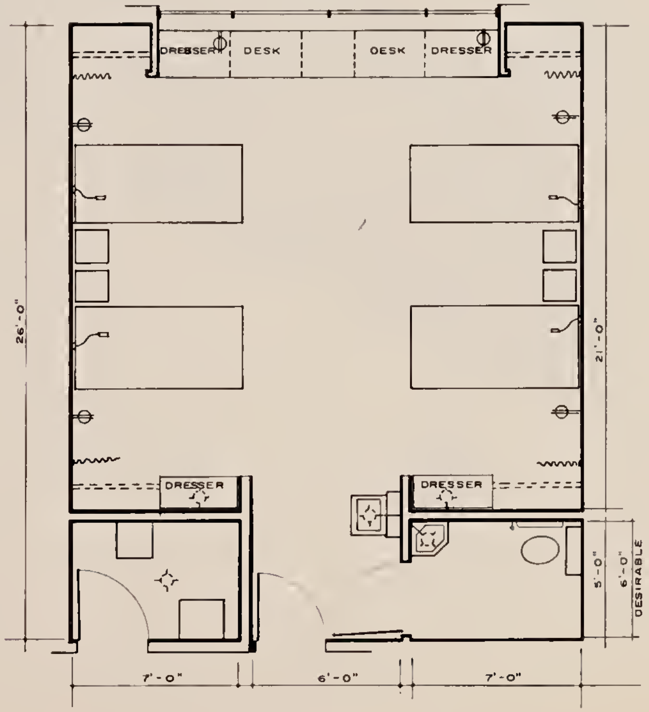


TWO-BED ROOM WITH COMPLETE SEMIPRIVATE BATH


SIX-BED ROOM WITHOUT TOILET OR BATH



THREE-BED ROOM WITH COMPLETE BATH



FOUR-BED ROOM WITH TOILET

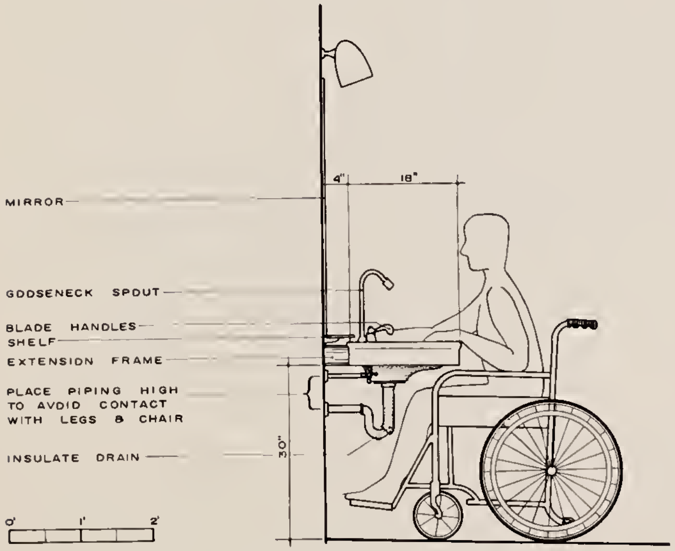
Bathrooms

Private and semiprivate bathrooms directly accessible from the bedrooms offer the most desirable arrangement.

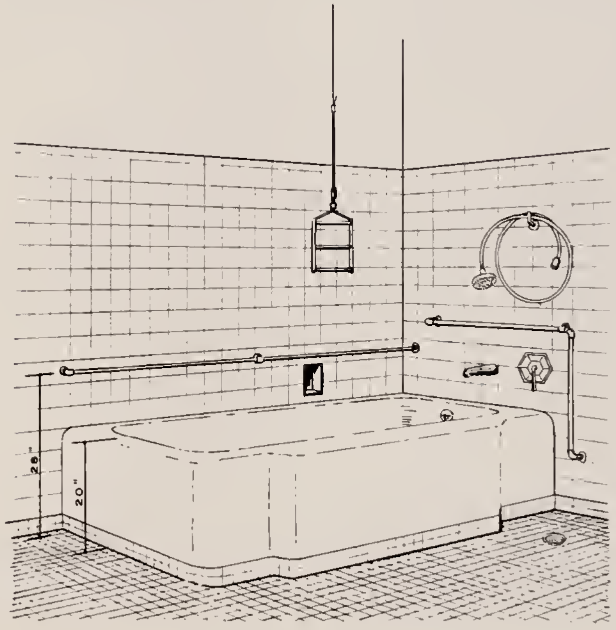
Like the bedrooms, all bathrooms should be planned for the use of patients in wheel chairs. Patients with bowel and bladder complications require more bathroom facilities and occupy these facilities for longer periods. A lavatory in the bedroom and one in the bathroom or toilet is recommended. The toilet rooms should be equipped with counters and storage units for genito-urinary supplies and equipment, for example, which are applied, used, and maintained in the toilet area.

All tubs and showers should be equipped with grab rails. The controls for the tub should be located so that the patient may fill the tub without first having to get in. Thermostatically controlled mixing valves are recommended for both tubs and showers to avoid the possibility of burns, particularly with those patients who have a sensory disturbance. Ceilings over bathtubs and toilets should be constructed to permit the installation of eye-bolts from which can be suspended a trapeze. Showers should be sufficiently large to accommodate a wheel chair, and a bench with a backrest should be available for those ambulatory patients with a limited ability to stand, particularly without bracing. Bucket-type seats are sometimes employed but have very limited use. Showers should be constructed so that adequate drainage is effected and the use of a curb avoided.

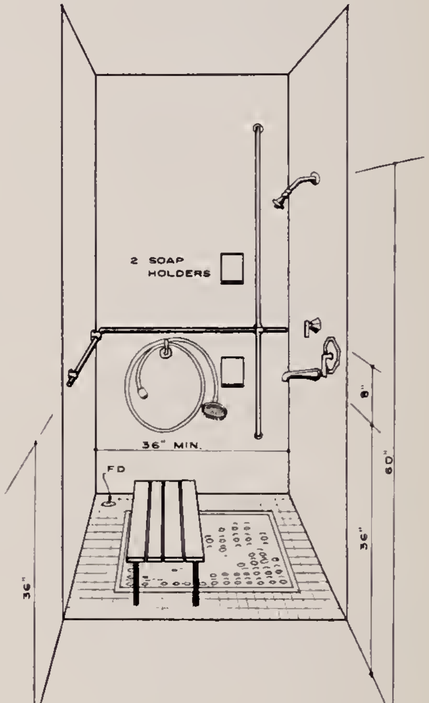
Lavatories designed for use of patients in wheel chairs are also convenient for ambulatory patients. Cabinets and towel bars suitable for



LAVATORY FOR WHEEL CHAIR PATIENTS (ADULT)



BATHTUB WITH ACCESSORIES



SHOWER FIXTURES WITH BENCH

patients in wheel chairs should be provided. Automatic hand dryers located 30" above the floor are recommended for public washrooms.

Toilets may be permanently raised 4" above normal height. However, nonpermanent elevated seats offer more flexibility in the use of toilets.

Free-standing handbars are available to convert conventional installation.

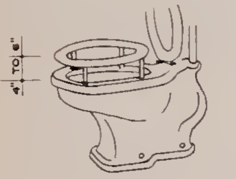
Toilet and bath units which adjoin and serve two-bedroom units reduce flexibility in the use of bedrooms.

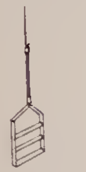
When bath or shower facilities are not directly accessible from bedrooms, centrally located group bath and shower facilities must be planned. All tubs should be raised approximately 4", and tubs in the nursing unit should have free space at the head end to minimize the problem of assisting patients in and out of the tub.

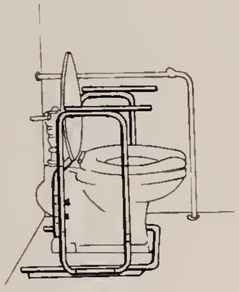
In-swinging doors in bathrooms are a potential source of danger if the patient should fall and block the closed door. If space limitations dictate an in-swinging door, consideration should be given to substituting a curtain for the door using easily removable stops, or a sliding door.

A push-button should be located near the water closet so that patients may signal for assistance.

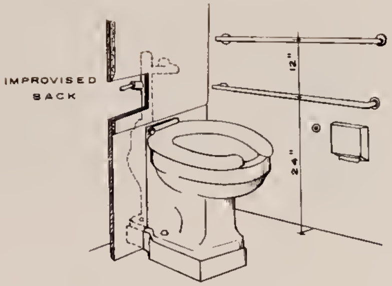
All toilet facilities throughout the building should be planned for wheel chair use. In addition to the specifications mentioned beforehand, water closets should be situated so as to be accessible by patients in wheel chairs from the front



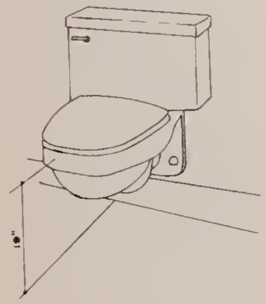


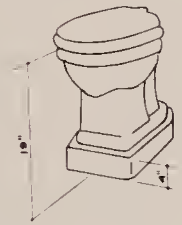


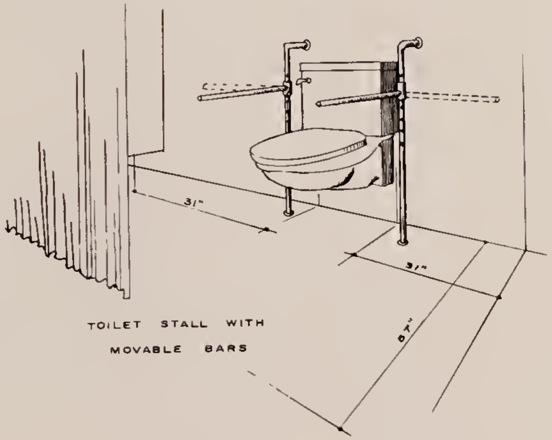
FREE STANDING HAND BARS



W C WITHOUT A BACKREST



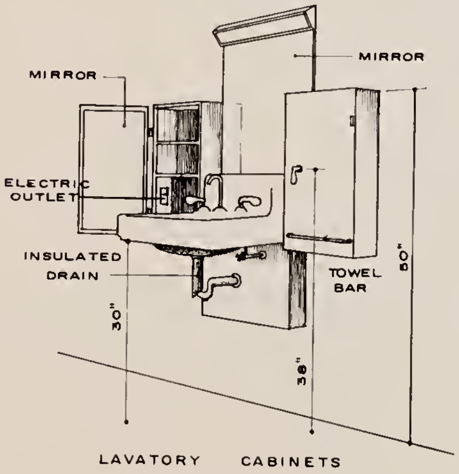


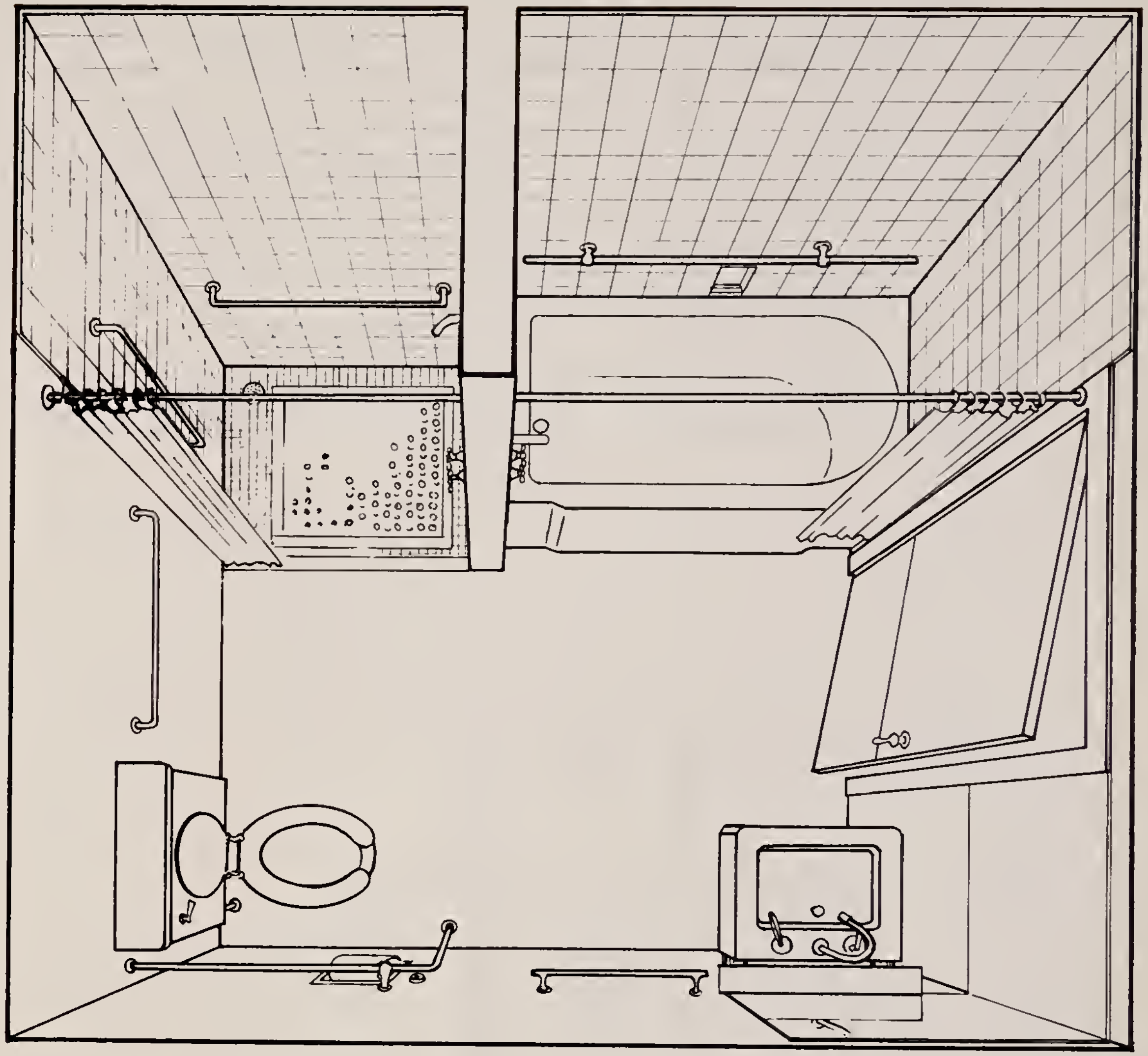


TOILET STALL WITH MOVABLE BARS

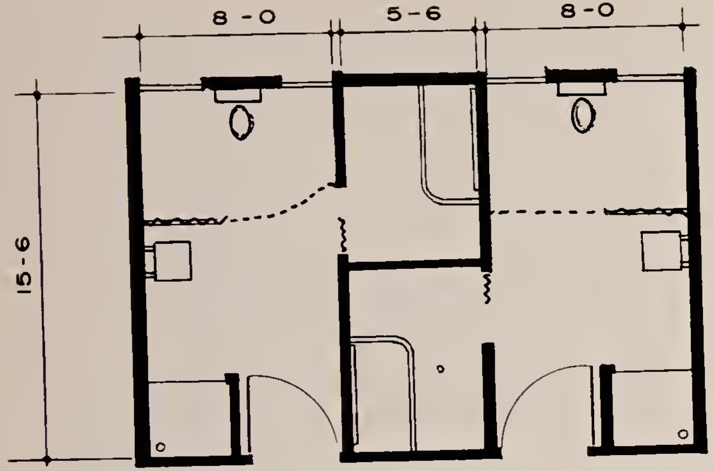
or from either side. If space is allowed at one side only, then repetitive units should provide space alternately on the right and left.

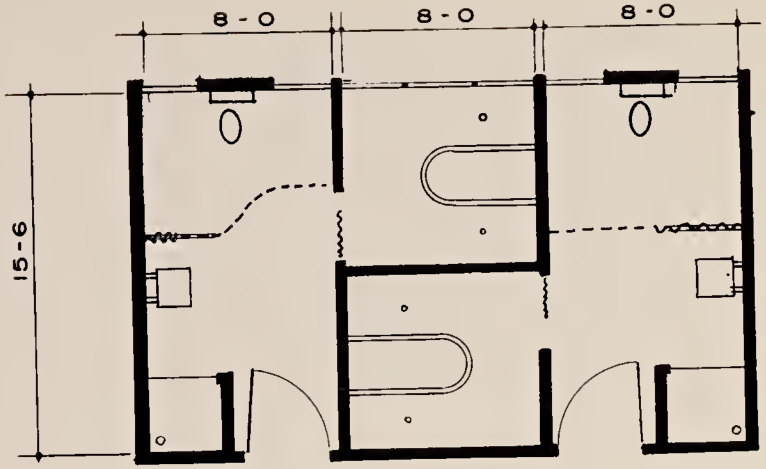
Special equipment and special adaptions are frequently required to achieve self-care. This not only stimulates a spirit of independence in the individual but minimizes staff requirements. As many patients, however, can be trained to cope with standard facilities, a training unit incorporating standard equipment should be available.

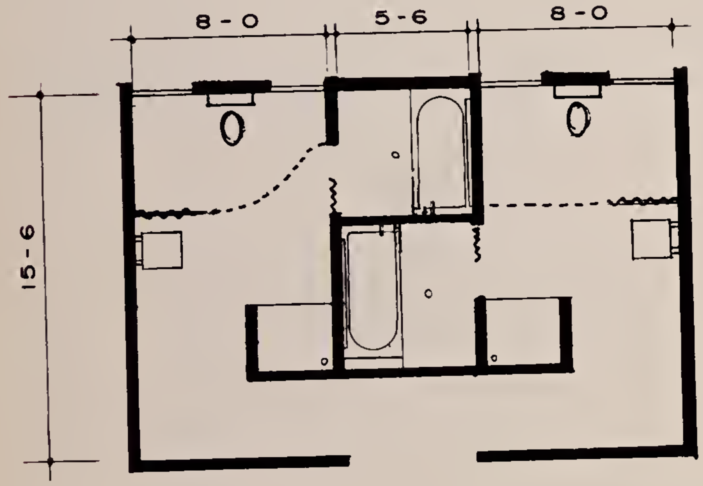




COMPLETE BATHROOM FOR WHEEL CHAIR PATIENTS



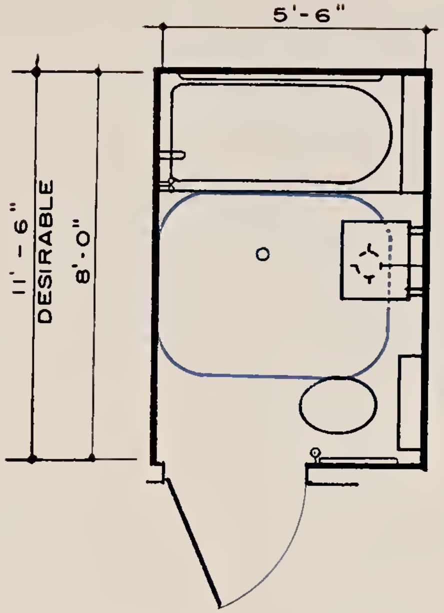


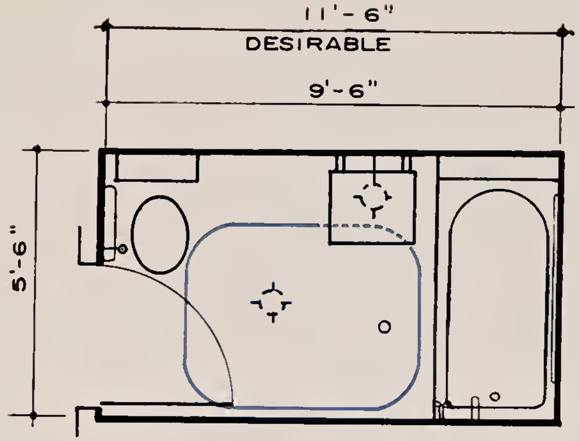


GROUP SHOWER AND BATH ARRANGEMENTS

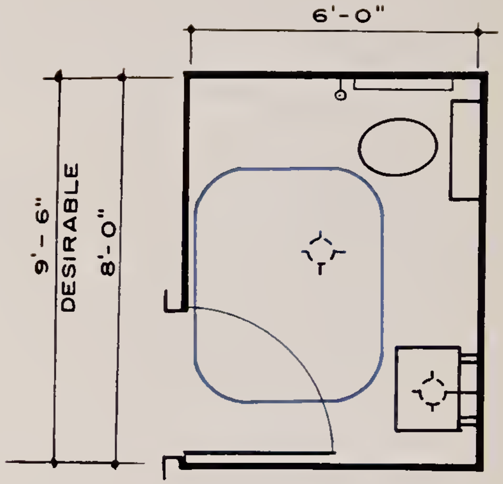
Where there are many wheel chair patients, more extensive application of this space arrangement is recommended. Space should permit wheel chair location at both sides and front of the water closet. Space at both sides of fixture also provides greater convenience for the attending nurse or therapist.

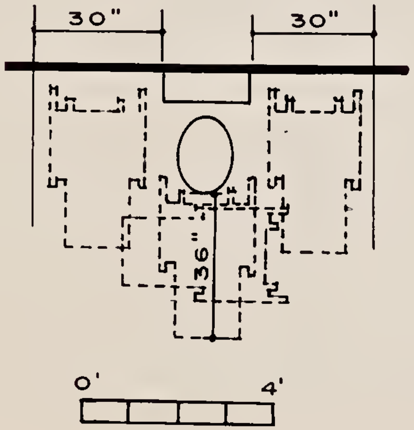
Desirable dimensions permit locating water closet with access from both sides. See drawing 2, Section IV, for minimum area for 180° turn.

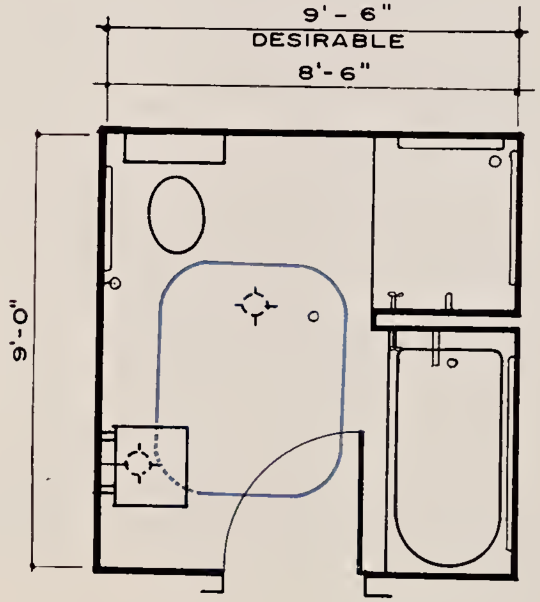


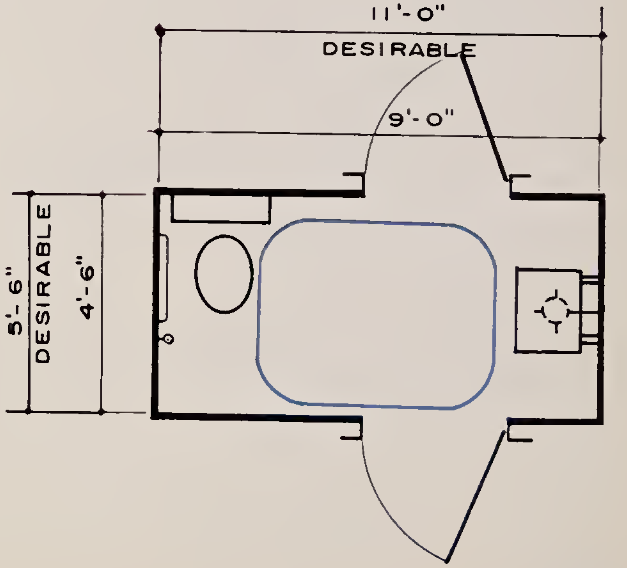


BATHROOM ARRANGEMENTS FOR WHEEL CHAIR PATIENTS









E. CHILDREN'S TREATMENT AND TRAINING

A children's treatment and training unit serves children who are physicaly handicapped by cerebral palsy, poliomyelitis, accident, deafness, speech defects, or epilepsy.

Early diagnosis and prompt treatment of the disability together with an academic program gauged to the child's mental capacity, are essential for rehabilitation.

The unit provides facilities for therapeutic treatment in addition to guidance and academic instruction for preschool and school-aged children.

Therapeutic treatment of children is administered under medical supervision, whereas academic instruction is given by teachers trained in nursery education and in special education. Particularly in the case of the preschool program, the child's physical and emotional needs are the concern of several departments.

Nonprofessional assistants or volunteers frequently are trained to assist therapists and teachers in the children's program.

The treatment-training facility is a stage prior to the child's enrollment in a special education class or a regular school classroom.

Location Within Building

Children's facilities should be separate from adult activities within the building wherever possible.

Certain facilities serving the center as a whole, such as medical diagnosis, speech and hearing testing, psychological testing, need not be duplicated. However, when the children's program is of sufficient size, children's physical and occupational therapy should be provided in a separate section of the building rather than in a portion of the adult therapy rooms. Similarly, children's speech and psychological therapy should be housed in the children's wing if a very extensive children's program is anticipated in these areas of rehabilitation.

Children's therapy areas should be accessible to the staff in adult therapy departments.

As physical and occupational therapy and programs normally conducted in classrooms take advantage of outdoor activities, arrange these areas accordingly.

Provide a separate entrance for children so that vehicular and pedestrian circulation does not conflict with adult patient activity.

Locate the speech and hearing facility in a quiet zone. Others areas of children's activity should be removed from noisy zones within the rest of the building.

Staff-Patient Ratios

Staff-patient ratios vary with the disabilities served. If the program includes many cerebral palsy patients, minimum ratios apply with one physical therapist treating an average of ten patients per day, one occupational therapist an average of eight, and one speech therapist, six patients.

For special education instruction, ten students is a maximum teacher load for school-aged children. For preschool children with extensive involvements, the average teacher load is four to five with some assistance if this ratio is to be maintained.

Organization of Space

A minimum facility for children's treatment and training consists of a nursery room for preschool children and a classroom for school-aged children, a physical therapy exercise room, treatment cubicles, and a room for occupational therapy; use may be made of facilities in the rest of the building for treatment of children as well as adults in such matters as speech therapy, psychological therapy, and hydrotherapy.

As the outdoors may be used for children's play therapy and classrooms, this portion of the building should relate closely to the out-of-doors for safe and private use.

As children will be on the floor frequently, it should be comfortably heated. Window sills should be low so that children may see outside provided the view is not distracting. High windows in the cot, speech and hearing, and psychological therapy rooms may be necessary to avoid exterior distraction.

As children frequently tumble, resilient floors are highly desirable. The provision of handrails in the corridors is recommended.

Preferably the children's treatment and training unit should be a separate wing of the building with its own entrance and playground.

Waiting Area and Related Facilities

Provide a covered unloading entrance for buses, taxis, and autos.

Allow space for wheel chairs, children, parents, and visitors. Place ample coat racks and toilet facilities near the waiting area. These should be designed so that the children may need only minimum assistance. (For preschool children these facilities may be part of the nursery room.)

Space for a receptionist should be included in the waiting area.

Frequently, volunteers assist with children's activities; therefore, provide a suitable lounge for them by the waiting area.

If a small office is provided for the medical director near the waiting area for the interviewing of parents, one will avoid the presence of children in the main section of the center.

In larger programs a social worker's office may be required. The social worker is then available for parent interviews and in smaller centers may act as the co-ordinator of the children's program.

A small room, equipped with a dictation machine, may be used to advantage by the staff to compile progress records.

Mothers are often accompanied by other children. Provision of a small volunteer supervised playroom keeps the waiting area quieter and less congested.

A pay telephone in the waiting area will eliminate frequent and annoying disturbance of the staff.

A small room with a cot where temporarily indisposed children may await transportation home is essential.

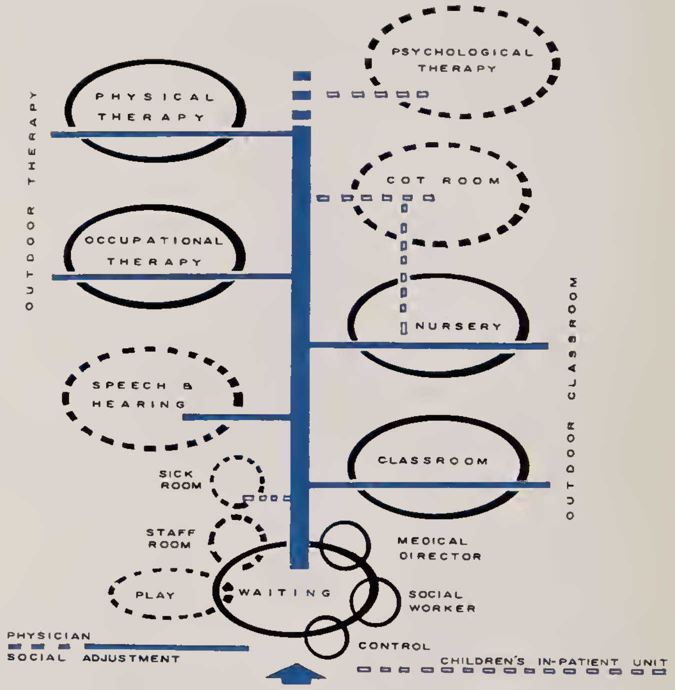
Nursery

The plan indicates a room for approximately 12 preschool-aged children.

Special equipment may be needed for particular disabilities. Allow space adjoining the activity area for the storage of ambulatory equipment, toys, and other necessities.

For training purposes, place coat lockers within the room with open cubicles for coats, hats, and rubbers.

Provide ample toilet facilities near the nursery and outdoor play area. Lavatories and water closets scaled to children's size are conducive to self-help.



Include a teacher's closet.

To avoid disturbing the program, an observation cubicle accessible from the corridor is desirable for parents' and visitors' observation and as a facility for a training program.

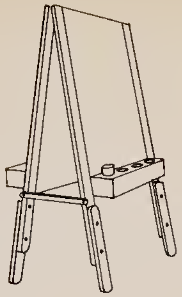
If a cot room is not included, provide mat storage space.

Movable sectional storage units permit flexible use of space to create subdivided play area as well as to make possible instructional use of the room. All furniture should be in scale with the children: provide easels for painting, book racks for reading, toys and blocks for play house activity.

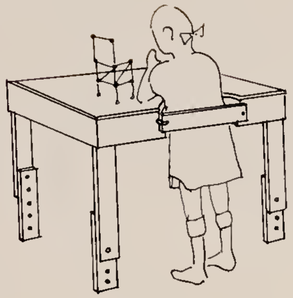
Provide a sink for the teacher's and children's use.

A piano and record player are important items of equipment.

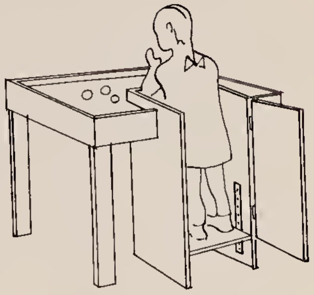
Provide access from the room to the outdoors for outside play.



STANDARD EASEL

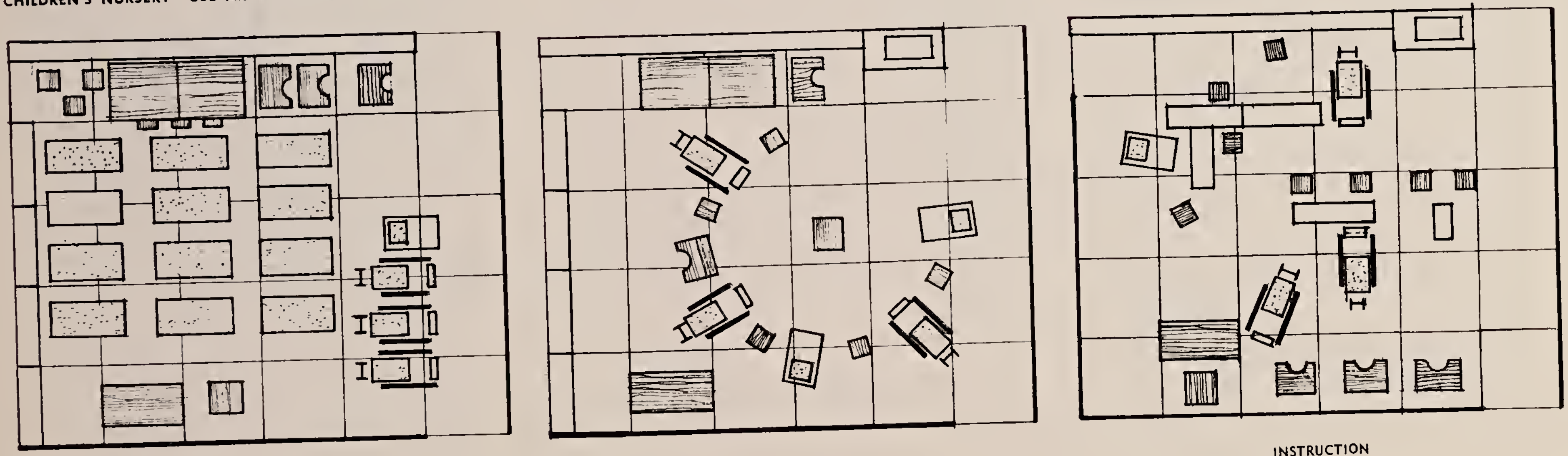


STANDING TABLE
ADJUSTABLE HEIGHT



STANDING TABLE WITH BOX
ADJUSTABLE HEIGHT

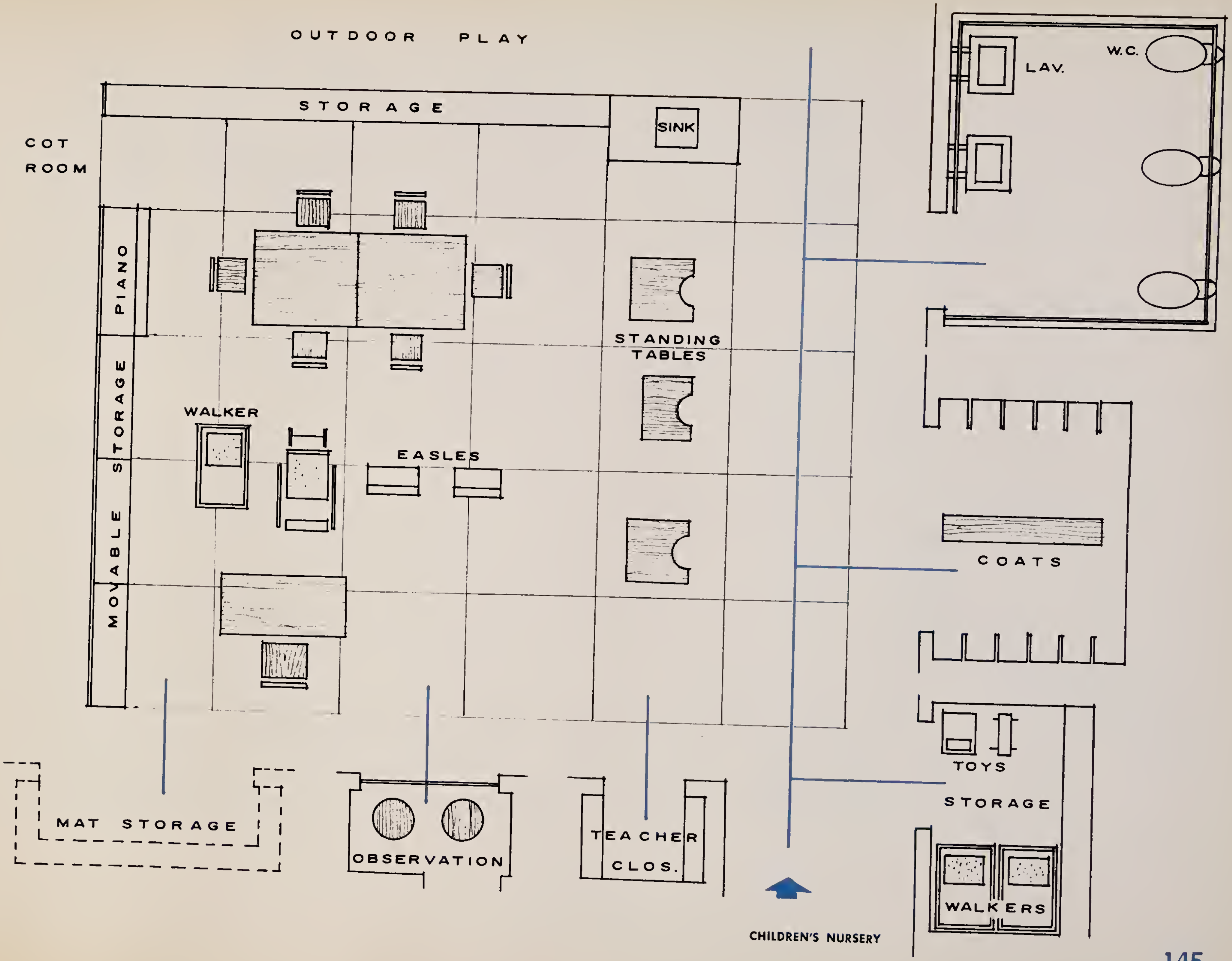
CHILDREN'S NURSERY—USE ARRANGEMENT



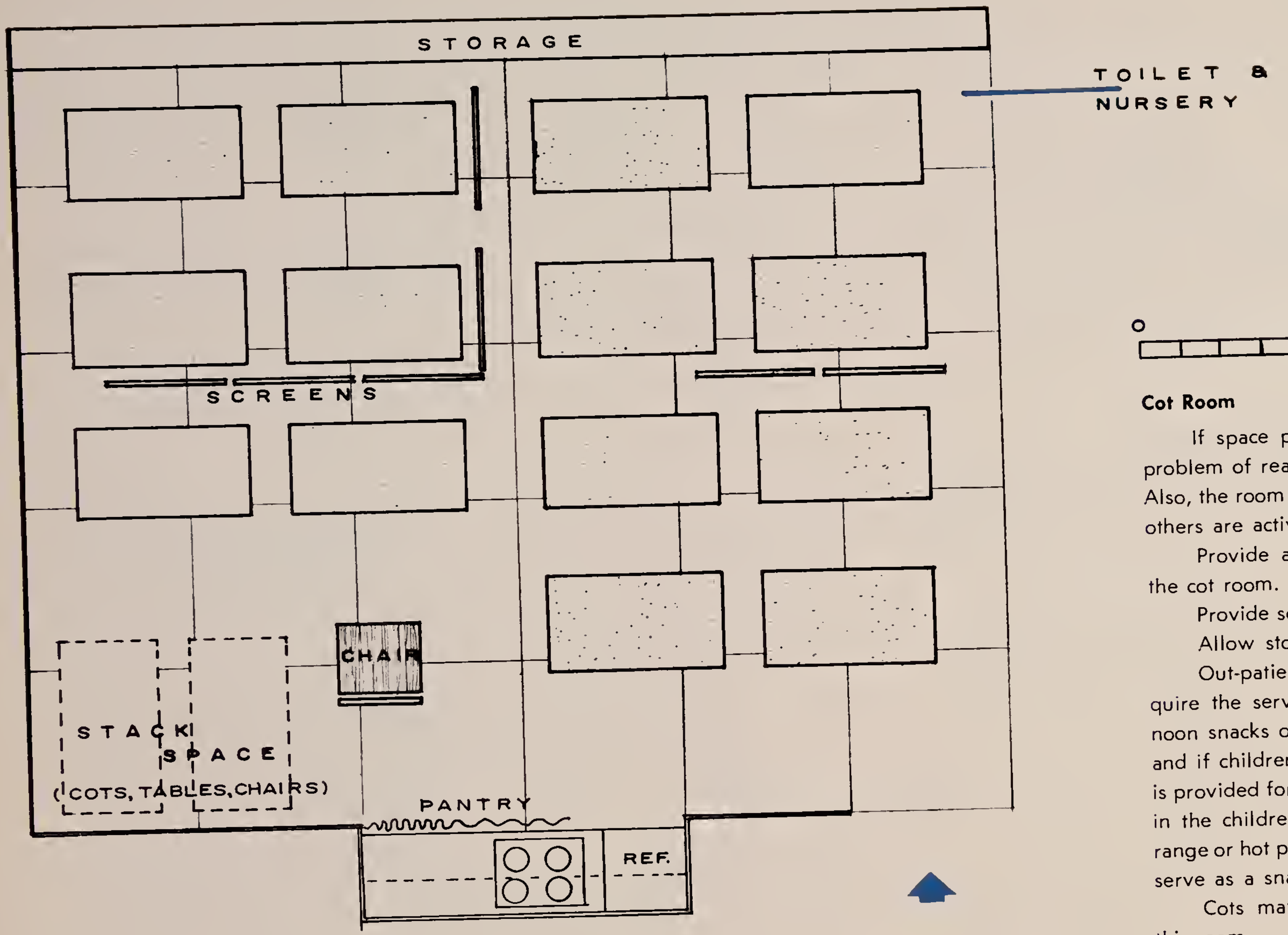
RESTING

PLAYING

INSTRUCTION



CHILDREN'S NURSERY



COT ROOM

Cot Room

If space permits, a cot room alleviates the problem of rearranging furniture in the nursery. Also, the room may be used for individuals while others are active in the nursery room.

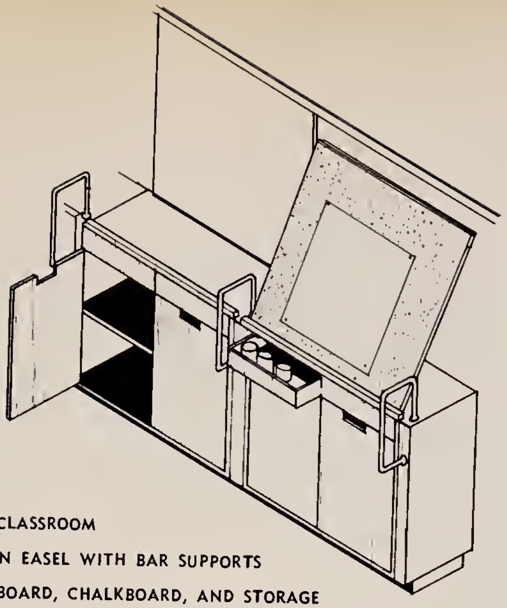
Provide access to toilets and nursery from the cot room.

Provide screens to subdivide groups of cots.

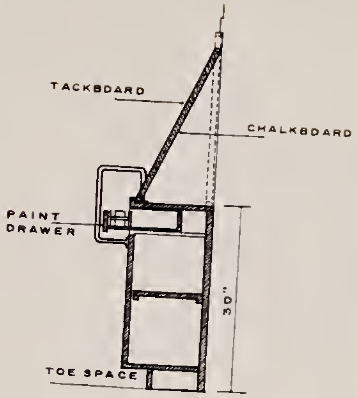
Allow storage space for blankets.

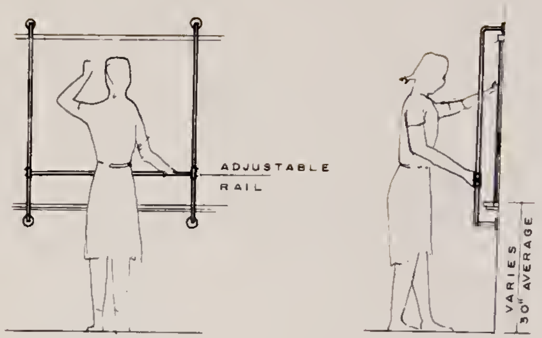
Out-patient children's programs usually require the serving of midmorning and midafternoon snacks of milk, orange juice, and crackers; and if children stay all day, sometimes hot soup is provided for lunch. This requires a small pantry in the children's area with a refrigerator and a range or hot plate. The cot room may conveniently serve as a snack room.

Cots may be stacked for multiple use of this room.



CHILDREN'S CLASSROOM
COMBINATION EASEL WITH BAR SUPPORTS
TACKBOARD, CHALKBOARD, AND STORAGE





CHILDREN'S CLASSROOM
CHALKBOARD BAR SUPPORT

Children's Classroom

For older children an academic room for 10 students is indicated.

Special writing surfaces for wheel chair users, easels, and the like may be devised for particular cases.

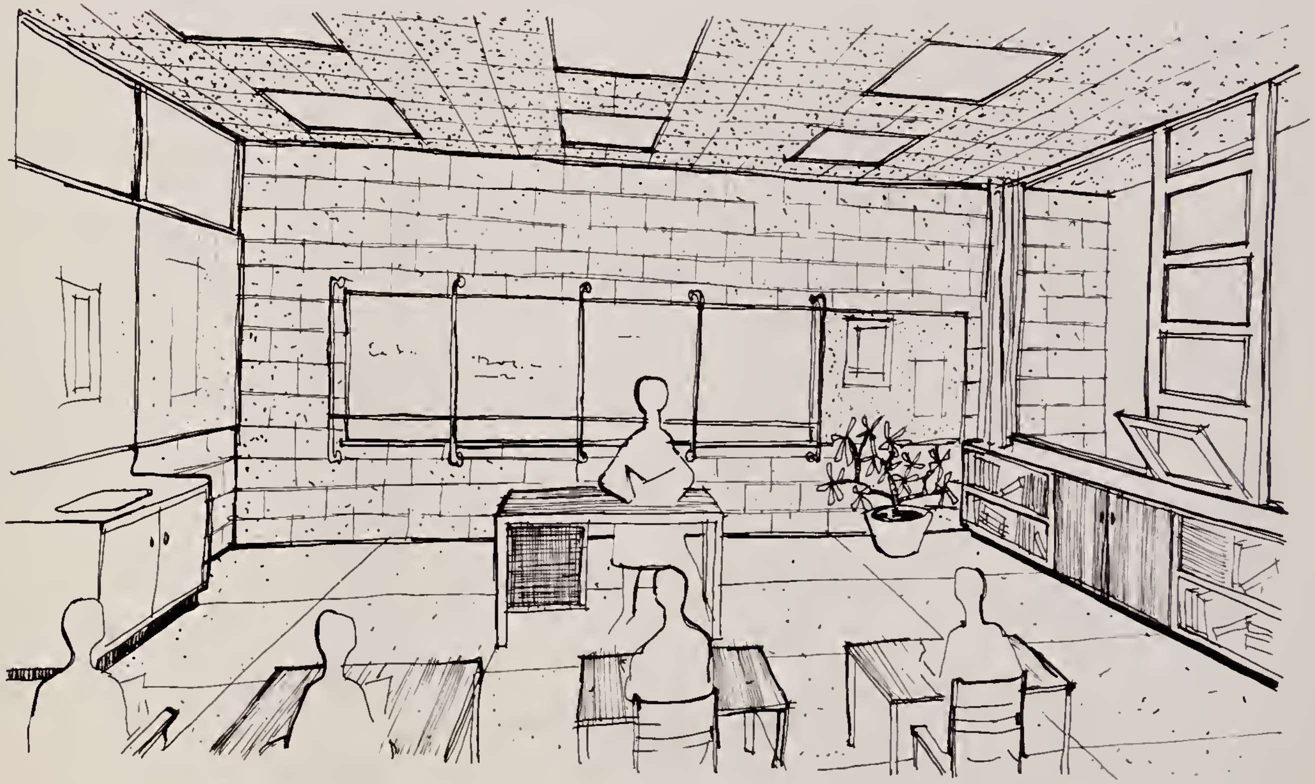
Chalk boards with adjustable railings provide hand support for students.

Illustrated is a storage unit with easel and grab bars. Variations in this type of equipment may be devised for such a classroom.

Provide a sink for teacher and pupils.

As in the nursery, arrange for storage room, a teacher's closet, and an observation cubicle. Ample toilet facilities for boys and girls should be provided near the classroom.

The outdoor classroom may be planned so as to be shielded from outdoor play activity.

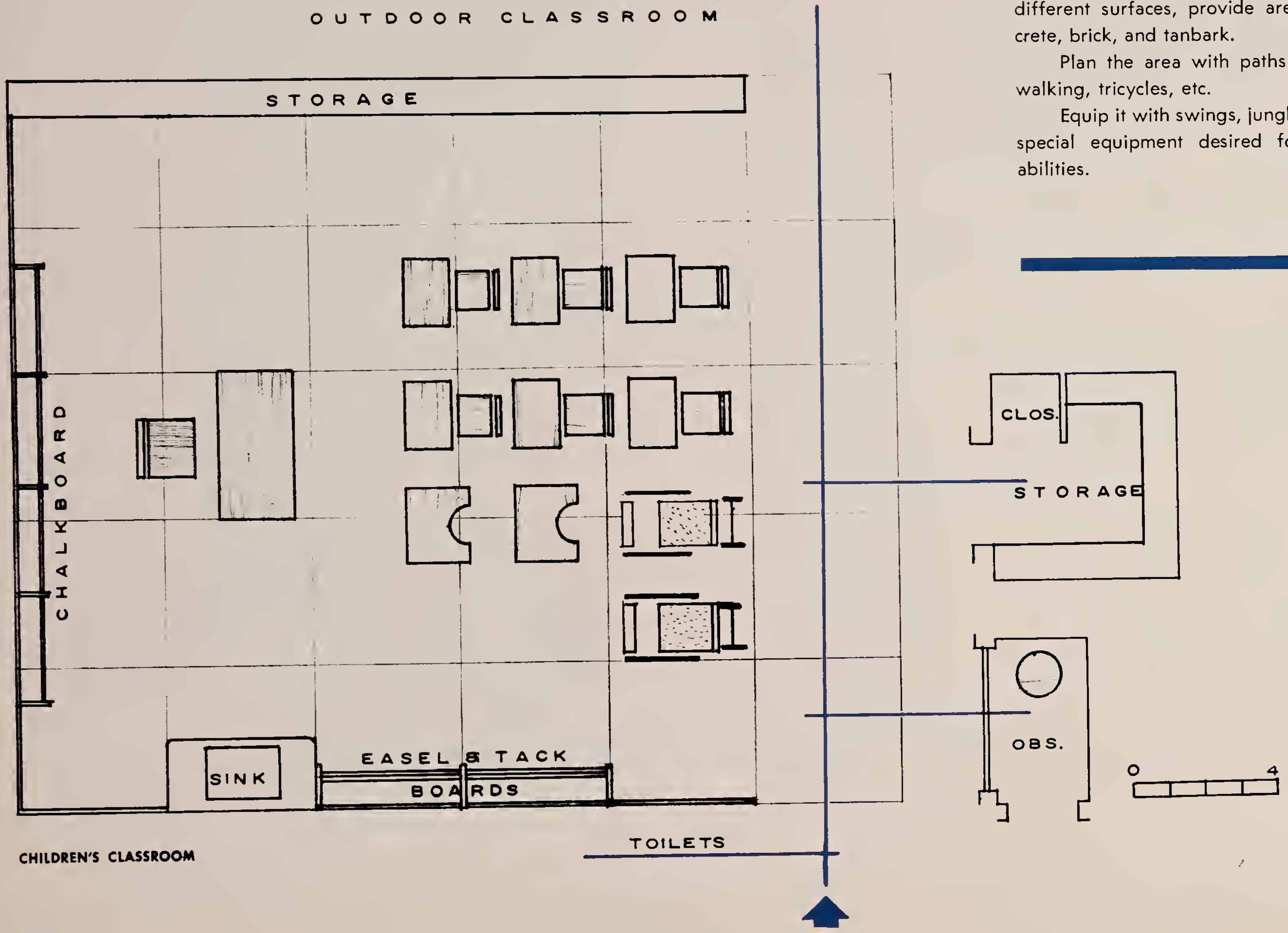


Outdoor Play

To give the child experience in walking on different surfaces, provide areas of grass, concrete, brick, and tanbark.

Plan the area with paths of circulation for walking, tricycles, etc.

Equip it with swings, jungle gym, slides, and special equipment desired for individual disabilities.

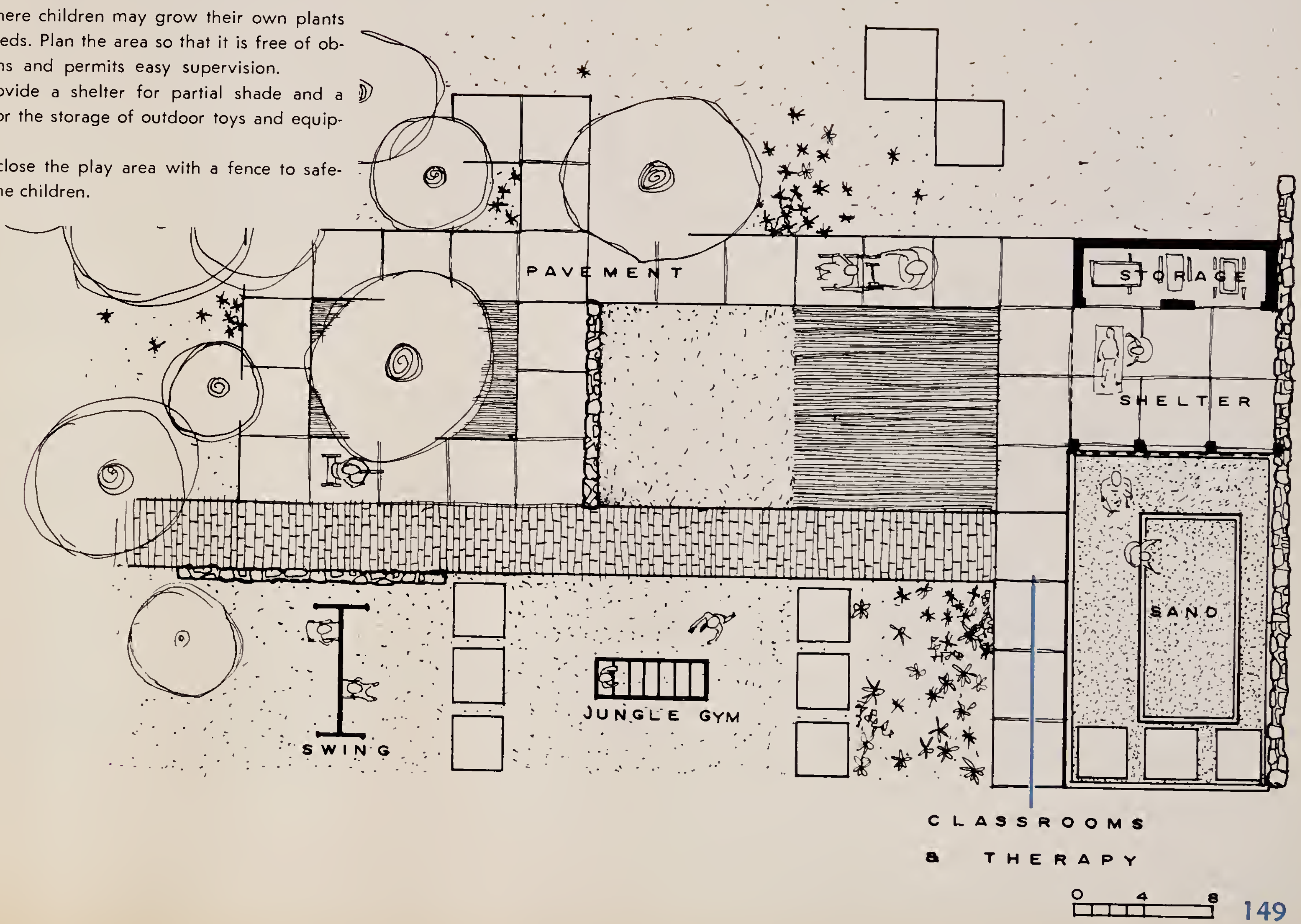


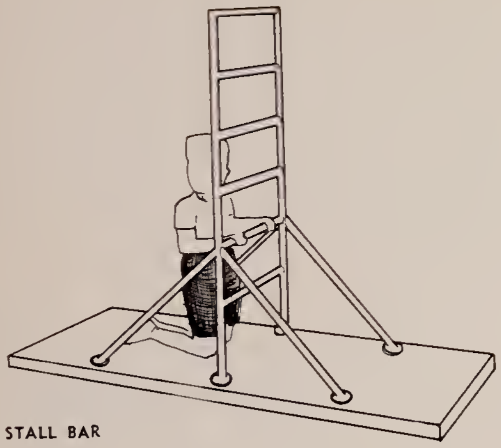
CHILDREN'S CLASSROOM

To create an awareness of nature, provide trees, shrubs, and flowers; and allocate a small area where children may grow their own plants from seeds. Plan the area so that it is free of obstructions and permits easy supervision.

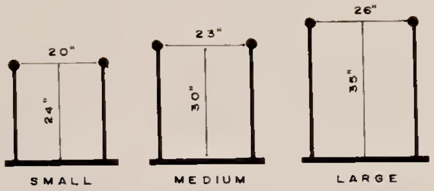
Provide a shelter for partial shade and a space for the storage of outdoor toys and equipment.

Enclose the play area with a fence to safeguard the children.



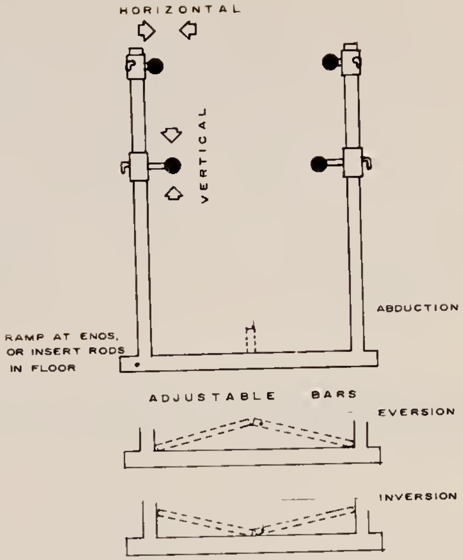


STALL BAR



PARALLEL BARS

MINIMUM LENGTH 7'-0"



Physical Therapy Exercise Room

The requirements here are similar to those needed in the exercise room for adults, except that the equipment is selected for the child's size and interests.

The space indicates a minimum exercise area staffed by one therapist.

Treatment cubicle requirements are the same for children as adults; equip them with treatment tables and ceiling-mounted mirrors above.

Relate the area to outdoor therapy for outdoor exercises.

Provide a sink for the therapist's and children's use.

Toilet facilities for children should be immediately convenient to the exercise room and outdoor therapy.

Special equipment may have to be designed for individual cases. Illustrated are a movable stall bar and parallel bars adjustable in height and width for children of varying ages.

Occupational Therapy

Equipment should be selected for the child's physical and mental age level. The plan indicates an area staffed by one therapist.

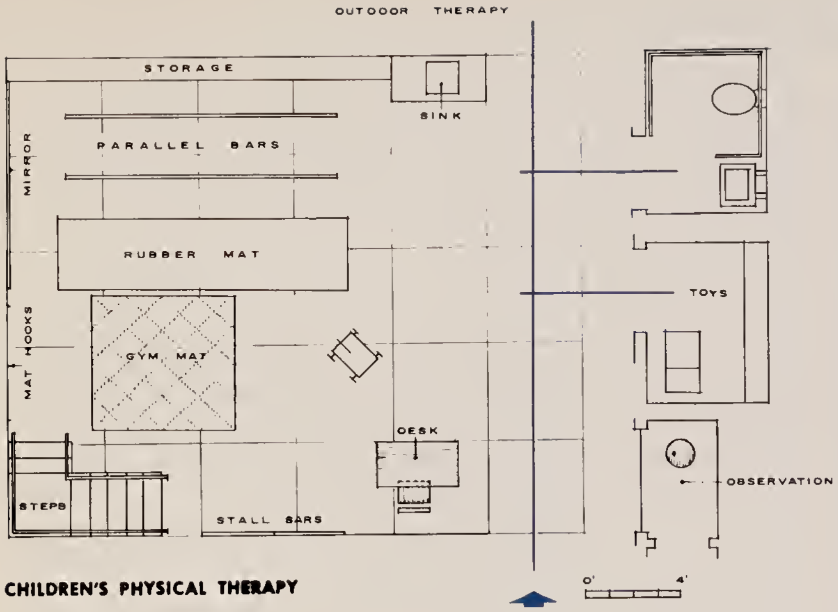
Place toilet facilities convenient to the therapy room.

Relate the room to the outdoors so that some activities may be conducted outside.

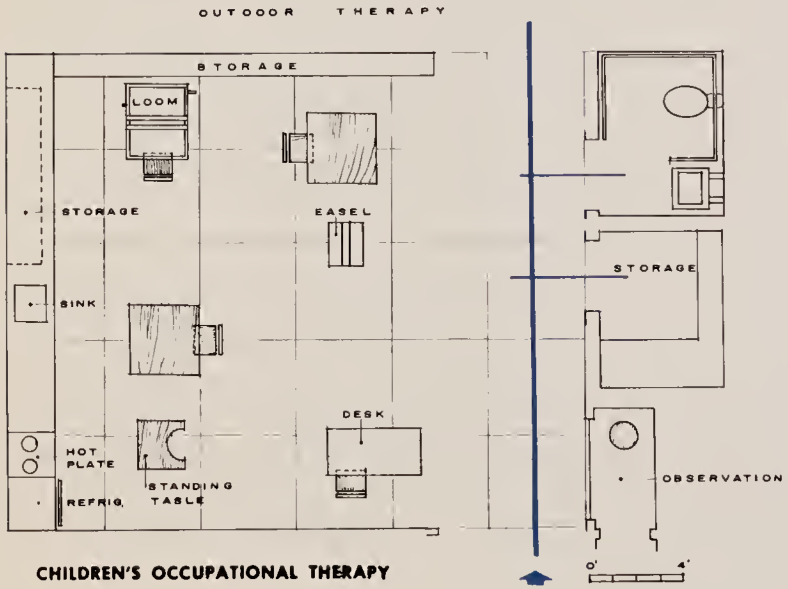
Although special equipment may be required for individual cases, equipment indicated includes standing tables, typing tables, work tables (all with adjustable heights), loom, easel, and workbench.

Provide a sink within the room for the children's and therapist's use.

As training in eating may form a part of the program, facilities for snacks—refrigerator, hot plate, and sink—are indicated. Or locate this facility within the children's treatment and training area to serve the nursery as well as the occupational therapy room.



CHILDREN'S PHYSICAL THERAPY



CHILDREN'S OCCUPATIONAL THERAPY

Speech and Hearing
Psychological Therapy

See main sections for speech, hearing, and psychological therapy.

F. ADMINISTRATION

The administrative unit of the center not only serves as the focal point for the internal organization of the building, but also is the point of initial contact for visitors to the center.

The size of the administrative unit will vary considerably with the size and scope of the center's program. Certain activities within the unit, however, are fundamental to all centers.

The administrative director is responsible to the governing body for the total operations of the center's program. For larger centers generally a business manager, or his equivalent, is immediately responsible for the accounting and administrative clerical staff. As the responsibilities of the director and business manager are closely related, their offices should be convenient to each other.

The director's office should be located so that it may be conveniently reached by visitors and the center's staff.

A conference room for staff meetings, also suitable for use as a board room, should be included in the administrative unit.

The business manager's office should be convenient to the accounting and administrative clerical staff.

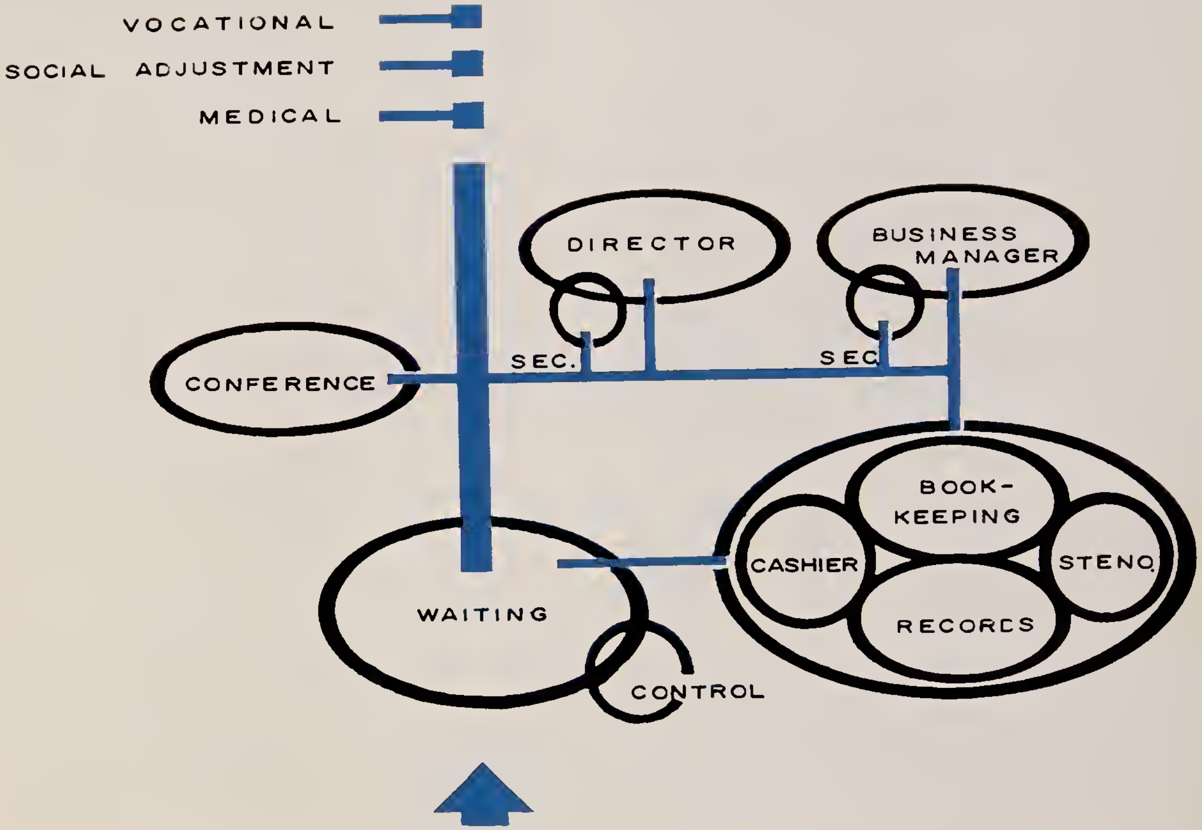
In the accounting and clerical area consideration should be given to the provision of a stenographic pool. In larger centers, a system of dictation recording in the central office and stenographic pool may be advisable. Centers with substantial sub-contract work in the sheltered workshop will require additional personnel and space in this area.

As many patients may wish to pay cash for services or may have inquiries regarding financial matters, the cashier's wicket should be convenient to the main entrance. However, it should be noted that such matters are frequently of a private nature. Consequently, the wicket should be so located and planned to achieve some degree of privacy. Although the cashier should be convenient to the patient, the wicket and the accounting section should be located so that it does not appear to be the dominant element to a visitor or a patient.

The entrance lobby should have a control station for a receptionist, who may, in some instances, be the switchboard operator. The room should be equipped with sturdy yet comfortable furniture and planned for wheel chair patients' use. If the lobby is to serve as the principal entrance for patients, provision should be made for coat storage and wheel chair storage in or immediately adjacent to this area.

Administrative personnel, in many instances, will be physically handicapped—an effective demonstration to visitors of efficient employment of the disabled. Planning of the administrative area should, therefore, incorporate the design requirements of the physically handicapped.

Although sheltered unloading areas for patients are highly desirable and should be located so that the patient does not have to pass through the administration area, the principal visitors' entrance should not, however, be an inconspicuous nor a secondary feature of the building. A covered walkway, for example, not only will protect visitors from inclement weather, but will give emphasis to a design element frequently overlooked in planning the total building.



G. GENERAL AREAS

Areas of activity for general use by the total rehabilitation center are of major importance. These include space required for such functions as recreation, study, dining, circulation, and other activities vital to the rehabilitation program. General considerations, such as floor finishes, wall fiinshes, lighting, heating, ventilating, acoustics, and similar factors which help establish the character of the whole building, are discussed in Section VII.

Recreation areas of some variety are needed in all centers. The extent to which they may be developed will depend upon the program of the center. Centers offering in-patient and children's services may have need for more extensive recreation areas, since their purpose is to augment and enrich the "working hours" of patients and staff. It has been found that well-planned, well-used areas for recreation yield a fine return to the center in terms of morale, interest, and support of the total program.

A **gymnasium for group play** can be used for games, meetings, and social activities. It can also serve some therapy activities, schedule permitting. (See Physical Therapy, Section VI. A. 2.)

An **auditorium** for plays, recitals, movies, and other recreational activities will contain seating suitable for the center's patients, and floors and aisles that make this seating easily accessible. The gymnsium may substitute as an auditorium. This necessitates provision of adequate storage for stacking and folding chairs. The auditorium can prove to be a valuable adjunct of the public relations program, useful for work with volunteers and civic organizations, and can accommodate staff instructional meetings.

Outdoor recreational areas should be considered in relation to the children's unit, the gymnasium, and the in-patients' non-nursing unit. Outdoor areas may also serve a therapeutic purpose when related to the physical therapy, occupational therapy, and social group work programs.

Lounges augment many areas of activity. The staff will find small lounges of considerable advantage to themselves.

Lounges for patients are essential for centers with in-patients and desirable for all centers. In the smaller centers, a central lounge may serve the whole building including visitors (particularly in the case of in-patient centers), and is generally located near the main entrance. Centers with sheltered workshops require lounge facilities near the workshop. Centers with children in-patients should have a separate children's lounge. Non-nursing units for adults may have lounges near the bedrooms.

Lounges should be furnished with sturdy, comfortable furniture. Chairs and sofas with firm seats and backs are easier for many patients to use than overstuffed furniture. Writing desks, card tables, magazine racks, draperies, and a few well-chosen pictures and accessories contribute a warm, friendly atmosphere to a highly useful area.

Centers with dining facilities frequently find it convenient to have the lounge near the dining room so that it may serve as a place of relaxation before and after dining.

If **television** is provided (particularly in the case of centers with in-patients), a separate room for this facility is recommended. If in-patient children as well as adults are housed in the center, an additional separate room for children's television is almost essential.

Provision of a **canteen** for both staff and patients is recommended for snacks and the "coffee-break." For centers with only out-patients, the canteen may be used as a lunch room for patients staying through the lunch hour as well.

A **library** and reading room stocked with professional books, pamphlets, and periodicals related to the field of rehabilitation is important to the professional staff of even a small center. Although the library sometimes serves a dual purpose as a staff conference room, this is not recommended due to resulting scheduling problems. Recommended for in-patients is a separate library stocked with books for recreation and study, and equipped with reading tables.

Some centers may include in their programs professional training and research; for this purpose, separate offices should be provided for the study of certain activities, **observation cubicles** with one-way vision glass may be used to advantage.

Centers with in-patients must have **dining** facilities. Larger centers, although serving only out-patients, may also have dining facilities to serve patients and staff who are present at the lunch hour. Provision of complete kitchen facilities and the staff required for food services are responsibilities few centers wish to undertake. For this reason, some may find it advisable to employ food catering service or to restrict the service to a canteen facility.

If food lanes are provided for **cafeteria** service, the lanes should be 34" wide for wheel chair use. However, as many patients may not be able to use cafeteria service, table service will also be required. The spacing of dining tables and their design should be in accordance with wheel chair requirements. Children should be accommodated in either a separate dining room or in an area assigned specifically to their use in the main dining room.

All centers can use to advantage the services of volunteers. Volunteers may assist the therapists in preparing patients for treatments, in transporting patients to and from the center, in operating the switchboard, assisting in clerical routine, and by performing numerous similar tasks. Their services play an important role in the operation of the center and also create an effective liaison with community organizations. Centers so organized should be equipped with an attractive **volunteers' room** furnished as a lounge and provided with separate coat racks and toilet facilities.

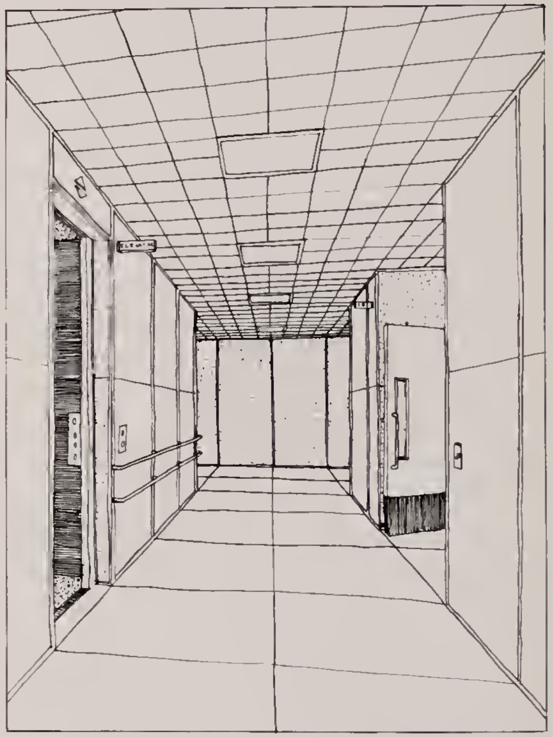
Locker rooms for the staff and for out-patients are essential. Usually a central locker room for the staff is provided. For out-patients a locker room near the entrance is recommended for smaller centers. For larger centers, locker facilities may be located near the entrances to each department.

Separate toilet facilities for staff, patients, and visitors should be provided. For recommended toilet arrangements for patients, see Section VI. D. In-Patients.

Storage space requirements are included under departmental subdivisions. However, it should be noted that rarely is adequate storage provided. Storage space is required for each department; but in addition, a general storage space is recommended.

Housing must be available for visitors and staff. For centers in isolated areas this may necessitate construction of housing facilities on or near the premises, particularly in the case of in-patient programs. Such housing should not be part of the center proper but should be conveniently situated, except for in-patient supervisors or matrons, whose living accommodations must be within the in-patient unit.

For efficient operation of the center, there must be efficient means of circulation between departments. **Corridors** must be planned for use by wheel chair patients and patients with crutches. For general use, corridors of a minimum width of 8'-0" are recommended. Those serving major traffic flow must be equipped with handrails: a double handrail if children are included in the center's program. Adequate illumination, acoustic control, easily readable room signs, and high wainscots to protect the walls must receive serious consideration. Expanding areas such as wait-



CORRIDOR
8'-0" MIN. WIDE

LIGHT SWITCH
35" HIGH

CORRIDOR HANDRAILS
24" & 32" HIGH

WAINSCOTING
5'-0" HIGH MIN.

ing spaces with natural light will create "breathing spaces" and shorten or "relieve" the apparent length of the corridor.

In addition to the **entrance lobby,** which should be planned with wheel chair storage space, coat space, and a convenient waiting area, larger centers will require additional waiting areas for each department.

Centers of more than one story must provide separate **elevators** for patients and staff and for service. The traffic, particularly in wheel chairs, must be carefully evaluated. If elevator controls are located not more than 30" above the cab floor, wheel chair patients may coveniently operate the elevator. Cab and hatchway doors must be of suitable width to accommodate wheel chairs and stretchers; and automatic operation of doors is certainly desirable unless a physically capable full-time operator is to be available.

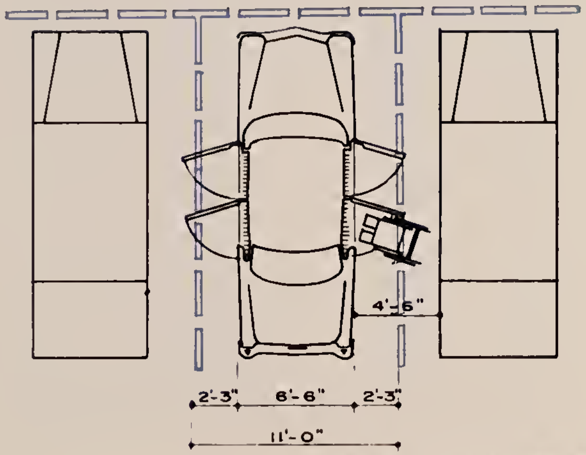
For safety it is recommended that **thermal alarms** be installed in areas unoccupied for long periods of time. **Manual fire** alarms should be located beyond the reach of children.

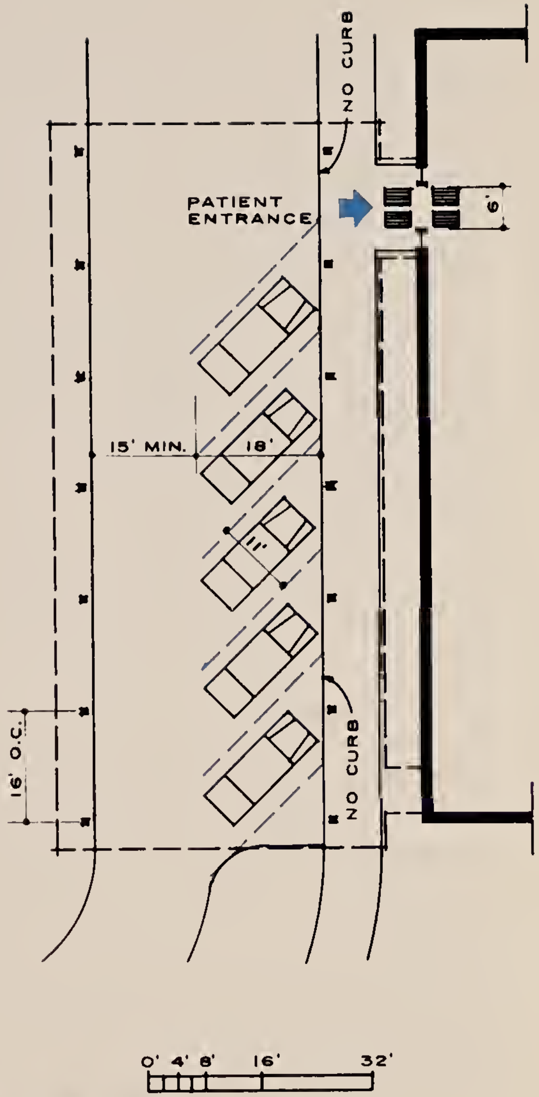
A master **clock system** for corridors and certain departments should be considered in the wiring of the building.

Exterior circulation involves both vehicular and pedestrian traffic. Buses, taxis, automobiles, and service trucks must be considered. **Parking spaces** should be located so that neither patients nor visitors need cross driveways to enter the building. Separate areas of the parking space should be designated for patient, staff, and visitor use. Appropriate directional signs should be considered for the efficient control of traffic. In some centers where many out-patients drive their own cars, a carport designed for wheel chair patients is a considerable convenience.

All centers will require a **service area** for the delivery of equipment, supplies, and fuel. However, centers with kitchen facilities, vocational training programs, and a sheltered workshop will have a greatly increased service problem; and the service area and its relation to other traffic must be studied accordingly.

Adequate **maintenance shop** facilities are essential. The shop not only will serve general maintenance purposes, but frequently will be used for the repair, modification, or fabrication of furniture and equipment used in the center.





PARKING SPACE FOR CARS OPERATED BY DISABLED PERSONS

VII. Environmental Considerations

In contrast to the short period of admission for most patients in acute hospitals, patients are admitted to a rehabilitation center for a comparatively long period of time, as either in-patients or out-patients. Generally, a clinical atmosphere should be de-emphasized. It is of the utmost importance that the environment of a rehabilitation center exert a constructive influence upon the rehabilitaton program. As the character of space can work for or against a program, it is important to include in the center those things which contribute to a better environment. These consist of tangible and intangible elements. Intangible elements have great psychological importance. Some of the intangible elements include:

Views: There is a close relationship here with site considerations, for a site with an attractive view enhances the interior space. Some views may be quite incompatible with some activities: a view of an active playground distracts patients undergoing treatment or rest. Views can be created with gardens, courts, and enclosures.

Light: The quality and quantity of natural and artificial light have great influence. Sunlight brings with it sun heat which may or may not be wanted. In all areas adequate and flexible sun controls are desirable. Artificial light comes in a range of colors as well as of quality and intensity. Only the most appropriate may be used.

Color: Pleasing color combinations can contribute a great deal at very low cost to a good rehabilitation program.

Music and Art: Although one may not understand the aesthetic aspects of one's environment, one cannot escape being affected by them. A relaxed and cheerful attitude on the part of the patient will accelerate his progress. Favorable attitudes can be accomplished by the proper use of music and art in the center's program and in the center's architectural space.

Sound: The control of sound involves sound transmission and absorption. It is important to avoid the creation of "dead sound areas" or of spaces where sound reverberates.

Smells: Destroying bad odors helps create a pleasant environment.

Air: The treatment of air so as to control its temperature, humidity, cleanliness, and distribution is essential for human comfort.

Additional environmental considerations to be classified as tangible elements include:

Wall Finishes: Walls must be durable and fairly smooth so that anyone rubbing against them will not damage himself or the wall. A durable and attractive wainscot is advisable for protection against wheel chairs and other devices. Wall finishes provide opportunities for effective use of color. A surface that is not too hard will be better for acoustical reasons, but it must have properties conducive to easy maintenance.

Floor Finishes: Nonslip, durable floors that can withstand frequent and thorough cleaning are recommended. An unslippery, resilient floor, resistant to indentation by equipment and furniture, should be used in many areas of activity, such as in most therapy areas, in-patient units, children's treatment-training unit, etc. For wet areas such as hydrotherapy rooms and bathrooms, unglazed ceramic tile is recommended. Sidewalks and ramps should also be finished with an abrasive surface. For vocational training and the sheltered workshop areas, concrete floors may be required.

Floors provide another opportunity for effective color planning. Different floor surfaces may be required to accustom the patient to different types of surfaces. Carpeting, however, should be restricted to an area that is primarily used for training patients to walk on different types of floor surfaces. Maintenance of floor surfaces is an important consideration. The safety factor, however, should be of paramount concern.

Furnishings: These should be of durable construction, of simple design, and of sufficient variety to be interesting but not confusing. For offices, lounges, in-patient rooms, warm home-like furnishings with a cheerful, positive character will contribute constructively to the general atmosphere of the center. This includes furniture, draperies, blinds, accessories, and other furnishings. The vocational areas and the sheltered workshop should, in contrast, have an industrial character.

Heating Systems: A zoned system will best provide the variety of temperature levels required in the various areas. Treatment areas, especially hydrotherapy, for example, will need higher temperatures than the voca-

Plumbing: Special equipment will require special plumbing. Plumbing installations tional training and workshop area. Draft free, uniform temperatures will be essential for all areas. Some areas, such as in-patient units, will require comfortable heating conditions twenty-four hours a day; whereas auditoriums, gymnasiums, and workshops, which are not used continuously throughout the day and night, should have heating systems which can be adjusted accordingly. Certain areas, particularly children's rooms, where the patients are on the floor or close to the floor, should have heating systems that moderate the floor temperature. This is important also in walking areas around hydrotherapy pools when they are installed on grade.

Air-Conditioning: A well-designed air conditioning system will considerably improve the total environment of the center. In some medical areas it is clinically, and in others psychologically, beneficial. In some climates it is essential, and in all climates desirable. Air conditioning will increase the morale of staff and patients; it will result in less absenteeism and make for more efficient treatment, training, and working conditions. If the budget does not permit installation of air conditioning at the initial stage, the building should be designed so that it may be added in the future.

should be readily accessible to provide for expansion, revisions, or relocations.

Electrical: This system must be designed for much equipment with high electrical load requirements. Power demands, particularly peak loads for equipment, lighting, service motors, and so forth, should be carefully measured before designing the electrical system. Adequate power should be available for future needs, and flexibility in the system should be planned to accommodate changing programs.

A three-phase, four-wire 120/208 volt system has many advantages.

An emergency power system will be required for in-patient facilities and may be required for other areas. State building code requirements should be studied in this respect.

A nurse's call system should be provided for in-patient units, which connects bedside and bathroom call stations with a signal at the nurses' station (or supervisor's office), utility room, and pantry.

Interconnecting telephones should be provided for all offices and possibly other locations. These may be connected to a dial system which will relieve the switchboard operator of handling inter-office calls.

A public address system is desirable in larger centers, and may be used to supply background music.

If a central dictating and recording service is planned, offices should be wired accordingly. The interconnecting telephone system may also be used for this purpose.

Landscaping: Skillful handling of landscaping can make a smooth and pleasant transition from the outside to the inside. From the outside, the building will be more inviting, and from the inside, an attractive view may be invaluable for a patient who is less mobile and unable readily to go outside. Even where land is at a premium, a terrace approach or a landscaped court can relate the building and the patient to the world beyond the boundaries of the building site.

Maintenance: Ease of maintenance means selection of the best material for the job. This, however, should not be done at the expense of other important factors. A room lined with ceramic tile is easily maintained, but is unsatisfactory acoustically. Corridors and activity rooms with dark walls may not show dirt but are unsatisfactory psychologically. Many materials satisfy requirements of easy maintenance without sacrificing other equally important considerations. Such materials should receive the designer's careful consideration.

Safety: As a rehabilitation center is part hospital, part school, part industrial shop, and part office, safety requirements for these particular areas of activity will have to meet the demands of each area. Corridors, fire exits, fire towers, fire extinguishers, and sprinkler systems, for example, should be designed accordingly. It should be noted that the patients are, in many cases, less mobile than individuals in other types of buildings. Safety requirements might well exceed minimum requirements established by building codes.

In addition to fire safety, all necessary precautions should be taken to protect the patient from falls. All potentially hazardous equipment, such as power tools, should be guarded and controlled for maximum safety. Situations that present little or no hazard to the nonhandicapped person may be serious problems to the handicapped. A few of the considerations in this respect are hot radiators, hot pipes, projecting pilasters, slippery floors, and swinging doors. The designer should eliminate as many as possible of these hazards.

These are some of the considerations pertaining to environment. They constitute the components of the psychology of space—that which is seen, heard, or otherwise sensed. The person coming to the center for comprehensive rehabilitation services is usually very sensitive to these kinds of influences. Environmental factors are always important; in rehabilitation center planning, they must have exceptional consideration.

VIII. Rehabilitation of the Future

In future developments there is one certainty: change. Changing population, changing kinds of disabilities, new methods of treatment, new medications, changes in training, changes in equipment and mechanical methods, new power, more automation, and other ways of enclosing space: these are only a few of the factors with which tomorrow's rehabilitation center will be working. Today's center must have expansibility and flexibility to keep pace.

Projected plans need to be a part of present plans. The kind of planning that will permit a possibility of choices means that the course best suited to the times can be followed. Future plans can best be developed in a series of stages; the budget, the population, the staff, and the physical plant have developmental stages which may be taken in five, ten, twenty, or longer yearly intervals for the purpose of planning ahead.

Rehabilitation of the future holds great promise: how much and how soon greatly depends upon the quality of planning that precedes the actual existance of the rehabilitation center.

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